

AN ECONOMIC SURVEY OF THE
PACIFIC AREA

Frederick V. Field, *General Editor*

PART I

Population and
Land Utilization

BY

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Preface

The present work is one of a group of monographs constituting *An Economic Survey of the Pacific Area* and designed to supplement and bring up to date the key sections of the *Economic Handbook of the Pacific Area*, published by the Institute of Pacific Relations in 1934. The value of this publication, it is believed, rests in the need for making available to a large number of people information on the Pacific area which is otherwise scattered in hundreds of different official and private sources, many of which are exceedingly difficult to locate and, to a large proportion of the potential readers, unavailable because of the variety of languages in which they are issued and also because of the often very limited distribution of the original documents. Without implying that the Pacific area is a wholly self-contained economic unit (indeed that cannot be said of any section of the world, large or small), it can be said that the world-wide importance of this region has been growing year by year and that information on its fundamental problems must be made more generally available in up-to-date form.

Like its precursor, the present work begins with studies of the populations of the Pacific countries, their growth and movements, and the relations of people to their physical environment. Other sections are concerned with trade and trade control; with the means of transportation, both internal and international; with the production and control of certain basic commodities produced in the Pacific area; with the enormously important changes wrought in the Pacific countries by the growth of industrialization in regions which, until very recent years, had not developed this form of economy.

The preparation of the studies has naturally been greatly affected by world events. War in both the Far East and Europe during the period of preparation has made some materials inaccessible and necessitated important revisions in the general plans adopted at the outset. To avoid undue delay the International Secretariat has decided that certain sections already in their final stages of preparation should be published immediately and is, therefore, issuing them in separate monographs as they are completed.

The nations, colonies or territories directly treated in this *Survey* are Japan Proper, Korea and Formosa, Manchuria, China, French Indo-China, Thailand, the colonies forming British Malaya, the Netherlands Indies, the Philippines, Australia, New Zealand, Canada, the United States of America, and the Union of Soviet Socialist Republics. The countries listed above do not by any means comprise a self-sufficient group; their external relations reach to the farthest corners of the globe. Indirectly, therefore, the study touches a much wider area. For example, the population of Australia and New Zealand cannot be considered without reference to Great Britain; the economy of Indo-China has been intimately linked with France; the trans-Pacific emigration of

Japanese has been greatest to Brazil and Canada; the United States and the U.S.S.R. have still closer contacts with other regions than they have with the Far East.

Moreover, a whole continent facing the Pacific has been omitted. The growing importance of the relations between the Orient, especially Japan, and Latin American countries, is one which the Institute has long recognized and to which it wishes to devote concentrated study. While certain of the general tables introducing the various sections include basic data on the Latin American countries bordering on the Pacific Ocean, it has not proved feasible at this time for the Institute to gather material for those countries which would be comparable in scope and quality to that collected for the countries enumerated above. However, the very rudimentary data which are included in the present survey are being amplified in a separate forthcoming Institute report on the trans-Pacific relations of the Latin American countries.

The editorial staff, under the leadership of Mr. Frederick V. Field during the period of planning and early preparation, included Miss Anita Bradley, Miss Billie Cookinham, Dr. Eleanor Dennison, Mr. Andrew J. Grajdanzev, Dr. Karl J. Pelzer and Mr. Joseph D. Phillips. In the final drafting of the chapters Dr. Pelzer, Mr. Phillips, Miss Katrine R. C. Greene, Miss Kate L. Mitchell, and Dr. Russell G. Shiman assumed the major responsibilities. In addition, almost every page has benefited from special data and comments furnished by Miss Catherine Porter, Miss Miriam Farley and Dr. Kurt Bloch of the research staff of the Institute's American Council and Miss Harriet Moore of the American Russian Institute. The late Dr. Carl L. Alsberg, Dr. Nicholas Mirkowich, Mr. Daniel Marx, Jr., Mr. Sydney B. Smith and officials of the Bureau of Foreign and Domestic Commerce have all contributed information and comments. Mention should also be made of the valuable clerical and technical assistance given by the office staff of the Institute's American Council and International Secretariat, especially Mrs. Annette Blumenthal, Miss Hilda Austern, Miss Elizabeth Downing, Miss Paula Sobotker, Miss Elizabeth Jorgensen, Miss Janet Howie, and Dr. Alfred Landsberger. Finally, it is necessary to record here the special thanks of the Institute's International Research Committee to the general editor, Mr. Frederick V. Field, and its great indebtedness to him for having assumed the arduous task of planning the project and directing the collection and editing of a vast mass of material throughout all but the final stages of the work.

Though this and the other monographs in the group are issued under the auspices of the International Secretariat as reports in the Institute's International Research Series, it should be noted that neither the Secretariat nor the Institute as a whole assumes responsibility for statements of fact or opinion in the studies. For all such statements the authors alone are responsible.

W. L. HOLLAND
Research Secretary

New York
March 1, 1941

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AN ECONOMIC SURVEY OF THE PACIFIC AREA

PART I

POPULATION AND LAND UTILIZATION

CHAPTER I

Population

A. INTRODUCTION

Population Distribution: A population map of the world reveals at first glance four major concentrations within the countries covered in this volume: in the Japanese Empire, in China and the adjoining coastal plains of Indo-China, in Java, and in the northeastern United States. This last does not lie within the Pacific area in the true sense of the word, but in the Atlantic region. The majority of the people of the United States, as well as those of Canada and of the Soviet Union, live in areas lying farthest from the Pacific. These countries are, nevertheless, political units and must be treated as such. It can also be pointed out that in all three countries there is a considerable movement of population towards the Pacific.

On the eastern shores of the Pacific, that is on the west coast of the Western Hemisphere, we find only very localized population concentration, such as those of the San Francisco Bay area, the region around Los Angeles, and central Chile.

The total population of all the countries bordering on the Pacific Ocean comes close to half of the population of the world, which is today estimated at about two billion.¹ At the end of 1936 about 81% of the total population of Pacific countries was living on the Asiatic side of the Pacific; 1% in Oceania, i.e., Australia, New Zealand and the various island groups; and 18% on the American side of the Pacific from Alaska to Chile.

Population Pressure: Of all Pacific countries China has the largest population, followed by the Soviet Union, the United States, Japan proper, the Netherlands Indies and Manchuria.² The size of the total population, however, has little relation to population pressure. Density figures per square mile or square kilometer are more revealing and place these countries in an entirely different order. Japan is the most densely settled country among those included in this volume, followed by the Philippine Islands, China, British Malaya and the Netherlands Indies. It is interesting to note that the population density of Java and Madura, in the Netherlands Indies, exceeds by far that of Japan proper. The most thinly populated countries are Australia, Canada, Bolivia, New Zealand and the Soviet Union. Even density figures, however, that is,

¹ The International Institute of Statistics estimated for 1930 about 1,988,279,000, the International Institute of Agriculture estimated for 1930, 2,012,810,000, the Economic Intelligence Service of the League of Nations reported for 1930, 2,028,200,000, and for the end of 1936, 2,115,800,000.

² Throughout this chapter the term Manchuria will be used to designate the territory embraced by the Japanese-sponsored state, Manchoukuo, except where, for practical reasons, as when referring to the government of that area, it is clearer to use the term Manchoukuo itself.

man-land ratios, are too crude to be of great value. Densities are based on the total area, irrespective of the percentage of a country suitable for human settlement. Large parts of the United States, Canada, Australia or Japan—to mention only a few—will never be settled by man because of climatic, topographic or other reasons. "To determine the man-land ratio, land must not be measured simply in square miles, but evaluated as to the carrying capacity, i.e. the capacity to support human life, to satisfy human wants."³

The carrying capacity of a country cannot be measured by field crops alone. Pastureland and forests must be added to mineral, climatic and human resources and geographic location (access to the sea with its riches of fish and access to trade routes).

"Indeed, any method based solely on the two factors—soil and population—cannot hope to provide a basis for describing or comparing adequately the demographic situation of different countries. Nor would it suffice to take account of the resources, consisting of the productive power of the soil and the wealth of raw materials. For an advanced country, abundance of capital, the development of technical methods, the degree of industrial, financial and commercial education and experience of individuals, marketing facilities, the frequency and good organization of exchanges, the balance of trade, and the balance of payments, are all resources which are equally important and which, to a great extent, condition the development of the other resources. Theoretically, it would be the ratio of the population of a country to all these factors taken together that would be required to determine the demographic situation and trends of the country in question."⁴

It would be ideal if for all of the countries under consideration, the ratio of the population to all these physical, economic and human factors

³ Zimmermann, Erich W., *World Resources and Industries*, New York, 1933, p. 124.

⁴ "Population and Social Problems," *International Labour Review*, Vol. XX XIX, No. 3, March 1939, p. 309.

Footnotes to Table 1

- (a) *The Statesman's Year-Book*, 1939. Population Index
- (b) *The Statesman's Year-Book*, 1938. Included are 24 Provinces of China proper, Tibet and Mongolia. However, the Russian population estimate for Mongolia of 900,000 has been used instead of the Chinese estimate
- (c) *Annuaire Statistique de l'Indochine*.
- (d) *The Statesman's Year-Book*, 1939. Area for Japan proper and total Japanese Empire is total area less 3,317 square kilometers for lakes and rivers given in Nasu, S., *Land Utilization in Japan*, Tokyo, 1929.
- (e) *The Japan Chronicle*, Sept. 12, 1940; *Japan-Manchoukeio Year Book*.
- (f) *Netherlands Indian Report*; *Statistical Year-Book of the League of Nations*, and *League of Nations Monthly Bulletin*.
- (g) *Statistical Abstract of the United States*; Commonwealth of the Philippines, Commission of the Census, *Special Bulletin* No. 1.
- (h) *Statesman's Year-Book*, 1939
- (i) "Official Report of the State Planning Commission," *Pravda*, June 2, 1939. Does not include the Far North
- (j) *Official Year Book of the Commonwealth of Australia*, and *League of Nations, Monthly Bulletin of Statistics*. Population figure includes approximately 60,000 aborigines.
- (k) *The New Zealand Official Year-Book*. Population figure for 1939 as of March of that year. Whites and Maoris are included
- (l) *Almanach de Gotha, Statistical Year-Book of the League of Nations*, *League of Nations, Monthly Bulletin of Statistics*
- (m) *The Canada Year Book; Statistical Year-Book of the League of Nations, 1937-38*
- (n) *Almanach de Gotha; Statistical Year Book of the League of Nations, 1937-38*, and *League of Nations, Monthly Bulletin of Statistics*
- (o) *Ibid.*
- (p) *Statesman's Year-Book*, 1939
- (q) First row of figures from *Statistical Year-Book of the League of Nations, 1937-38*; second row from *Statesman's Year-Book*, 1939; and third from *Estadística y Censo*, March 1939
- (r) *Almanach de Gotha*
- (s) *Ibid.*
- (t) *Ibid.*
- (u) *Statistical Year-Book of the League of Nations, 1937-38*. Exclusive of water area of 12,000 square kilometers or 4,500 square miles.
- (v) *Almanach de Gotha; Statistical Year Book of the League of Nations, 1937-38*
- (w) *Ibid.*
- (x) *Ibid.*
- (y) *Statistical Abstract of the United States, Almanach de Gotha*; Dept. of Commerce, Bureau of the Census, *Summary of Preliminary Population figures for the United States, 1940, and Territories and Possessions of the United States, by Sex, and Number of Men 21 to 35 Years of Age*, mimeographed releases.

TABLE 1. PACIFIC AREA: POPULATION, AREAS & DENSITIES
(E=Estimate C=Census)

COUNTRY	DATE OF POPULATION CENSUS OR ESTIMATE	POPULATION (In thousands)	LAND AREA (In thousands)		DENSITIES	
			Square Km	Square Miles	Persons Per Square Km	Persons Per Square Mile
ASIA						
British Malaya (a)	1937 38F	5,174	132.5	51.2	39.0	101.1
Straits Settlements	1938 L	1,358	3.5	1.4	38.8	97.0
Federated Malay States	1938 F	2,090	71.3	27.5	29.3	75.9
Unfederated Malay States	1938 E	1,817	57.7	22.3	33.2	81.4
China (b)	1936 E	427,330	10,356	3,998.5	41.2	106.8
Indo-China (c)	1936 E	23,030	740.4	285.8	31.1	80.6
Japan Proper (d)	1935 C	69,254	379	146	182.7	474.3
Korea	1935 C	22,899	221	85	103.6	269.4
Formosa	1935 C	5,212	36	14	144.6	372.1
Karafuto	1935 C	332	36	14	9.2	23.7
Japanese Empire	1935 C	97,698	673	259	145.2	377.2
Kwantung & SMR Zone	1935 C	1,657	3.76	1.452	440.7	1,141.1
South Sea Mandates	1935 C	103	2.149	0.83	47.9	124.1
Manchuria (e)	1939 C	39,454	1,303	503	30.3	78.4
Netherlands Indies (f)	1938 E	68,400	1,904	735	35.9	93.1
	1930 C	60,727	1,904	735	31.9	82.6
Java & Madura	1930 C	41,718	132	51	315.6	818.0
Outer Provinces	1930 C	19,009	1,772	684	10.7	27.8
Philippines (g)	1939 C	16,000	296	114	54.1	139.9
Thailand (h)	1937 C	14,465	518	200	27.9	72.3
U.S.S.R. (i)	1939 C	170,467	21,154	8,168	8.1	20.9
OCEANIA						
Australia (j)	1939 F	7,021	7,704	2,975	0.9	2.3
New Zealand (k)	1939 I	1,625	269	103	6.0	15.8
THE AMERICAS						
Bolivia (l)	1937 I	3,283	1,313	507	2.5	6.5
Canada (m)	1938 I	11,209	8,979	3,467	1.2	3.2
Chile (n)	1939 F	4,644	742	286	6.3	16.2
Colombia (o)	1938 C	8,653	1,162	449	7.4	19.2
Costa Rica (p)	1938 L	532	60	23	9.9	25.7
Ecuador (q)	1936 L	3,060	455	176	6.6	17.0
	I	2,757	715	276	3.8	10.0
	I	3,200	673	260	4.7	12.3
Guatemala (r)	1936 F	2,373	110	42	21.5	56.5
Honduras (s)	1935 C	962	115	41	8.4	21.9
Mexico (t)	1938 I	19,479	1,963	764	9.9	25.4
Nicaragua (u)	1937 I	1,154	116	45	9.8	25.2
Panama (v)	1937 I	547	84	32	6.5	17.1
Peru (w)	1936 I	7,000	1,249	482	5.6	14.5
Salvador (x)	1937 F	1,665	34	13	48.9	128.1
U.S.A. (y)						
Continental	1940 C	131,410	7,702	2,974	17.1	44.2
Alaska	1940 C	72	1,519	586	0.05	0.1
Guam	1940 C	22	0.544	0.210	41.0	106.1
Hawaii	1940 C	423	16.6	6.4	25.5	66.1
Panama Canal Zone	1940 C	52	1.4	0.5	37.0	103.7
Samoa	1940 C	13	0.197	0.076	65.5	169.8

Footnotes to Table 1 on page 2

could be determined. Our statistical methods, however, are not sufficiently refined, and we can only determine a ratio of man to cultivated land, or a ratio of cultivated to total area.

All of these qualifications must be borne in mind when comparing population densities in the following tables. In countries like New Zealand or Australia, for example, the usage of pasture is a very important factor in the economic life; in Canada forests and mineral resources support a substantial part of the population; while in Japan fish supplement the nation's food supply to a noticeable degree.

Population Growth: Actual numbers alone mean little; the rate of population growth must also be considered, for trends are more important than the population status. "Growth as contrasted with stagnation or decline counts rather than density, for growth affects the wants, arts and institutions in quite a different way than stagnation does, and rapid growth differently from slow growth."⁶

The 19th century saw a general increase of population in every continent, and in many countries the growth has not yet slackened. Development of industrial production, of world trade, of mechanization of transport and of agricultural methods, the rising standard of living and improvements in hygiene and health conditions all are factors which explain this rapid growth. Already in the last century, however, signs of change became apparent in certain sections of Europe and the United States. Since the beginning of the 20th century, and with increasing speed since the World War, the crude birth rate has decreased in such Pacific regions as Canada, the United States, Hawaii, Australia, New Zealand and Japan. In many cases the effects of a decline in the birth rate have been counterbalanced by a fall in the mortality rate. But a low death rate is only a passing phenomenon, because the death rate must rise with the gradual increase in the proportion of aged people. The rate of natural increase has been decreasing together with the birth and death rates.

In using birth and death rate figures for Pacific countries, it has to be kept in mind that these rates are based on registration and their accuracy, therefore, depends on the completeness of the registration. It has to be admitted that registration in most Pacific countries has not reached a high degree of completeness. For this reason figures in Table 2 must be used with extreme caution. In the United States, for example, it was not until 1929 that registration was compulsory in every state of the Union, and even today registration is not yet complete. Canada's data are no better and in the rest of the Western Hemisphere and in Oceania and Asia figures are open to question in varying degrees.

It should be pointed out that many students of population no longer consider crude rates of birth, death or natural increase sufficiently accurate. They use fertility rates and net reproduction rates in their studies of trends in population movement. These rates, however, can be obtained only for countries with adequate statistics. On the basis of fertility and net reproduction rates, Kuczynski has divided the countries with adequate statistics into three groups. In the first group are coun-

⁶ Zimmermann, *op. cit.*, p. 122.

tries in which the rate of reproduction is still sufficiently high to maintain the level of population but in which there is a tendency towards decline. The second group is made up of countries with such a low birth rate that the reproduction rate is no longer high enough to maintain the population at the level of the present generation. The third group has reproduction rates which guarantee a continued increase of population. In the first group is Canada; in the second, the United States, Australia and New Zealand; while the third group includes such Pacific countries as Japan and, probably, the U.S.S.R.⁶

We note in Table 2 that British Malaya, the Philippines and Mexico show both an increasing birth rate and a decreasing death rate. The death rates are low in Canada, Australia, New Zealand, the United States and Hawaii, in contrast to Mexico, Guatemala, Salvador, Chile, the Netherlands Indies, Indo-China and Malaya. A decreasing birth rate is widespread in Pacific countries, but such countries as Australia, New Zealand, Canada and the United States have a very low birth rate in comparison with all Latin American or Asiatic countries. If we rank the areas according to the rate of natural increase recorded in 1938, the list would be headed by Costa Rica, followed by Salvador, the Unfederated Malay States, the Straits Settlements, the Federated Malay States, etc. (with data for several countries unavailable); New Zealand, Australia and the United States would be at the bottom.

A calculation of the rate of growth per 100 persons per annum, both by natural increase and by net immigration, for the years 1850 to 1900 and 1900 to 1930 in the United States, Canada, Australia and New Zealand, is presented in Table 3. Canada was the only country of the four in which the rate of growth increased.

Age Distribution: For a study of population trends, age group statistics are required. One of the results of falling birth and death rates is a decrease in the percentage of children and an increase in the percentage of old people. In Australia, for example, the percentage of persons under 15 years of age decreased from 31.6% in 1911 to 25.5% in 1937, while the percentage of persons over 50 increased from 13.7% to 20.4%. The figures for New Zealand show a very similar picture, and in the United States the percentage of children under 15 years dropped from 32.1% in 1910 to 29.4% in 1930, and the percentage of aged people over 50 years of age rose from 14.1% to 17.2%. In contrast to these countries, in Canada, all Latin American countries, Japan, Malaya, Thailand, the U.S.S.R. and Hawaii young people under 15 form more than 30% of the total population. Table 4 summarizes the more detailed table, "Population by Age Groups," by giving the percentages in three age groups: up to 14, from 15 to 49, and over 50 years of age.

Table 5 presents in greater detail both absolute numbers and percentages in the different age groups. It is interesting to compare the age groups of British Malaya and Hawaii, both regions having a considerable group of immigrant labor, with those of the United States or Japan. In British Malaya and in Hawaii the age groups between 20 and 34 are numerically stronger than the lower age groups, while in

⁶ "Population and Social Problems," *International Labour Review*, Vol. XXXIX, No. 3, 1939, pp. 301-2.

**TABLE 2. PACIFIC AREA: BIRTH AND DEATH RATES PER 1,000
POPULATION, AND RATE OF INCREASE**

COUNTRIES	1909-13 or 1910-14 Average	1925-29 or 1926-30 Average	1930-34 or 1931-35 Average	1935	1936	1937	1938
ASIA							
British Malaya (a)							
Birth	..	..	..	37.8	40.4	39.0	..
Death	..	..	..	22.3	22.0	20.9	..
Increase	..	..	..	15.5	18.4	18.1	..
Straits Settlements							
Birth	..	37.5	39.8	41.7	44.3	42.1	42.2
Death	..	30.7	24.7	25.1	24.9	22.4	21.3
Increase	..	6.8	15.1	16.6	19.4	19.7	20.9
Federated Malay States							
Birth	..	32.7	34.9	35.9	38.7	37.8	39.7
Death	..	27.4	19.9	19.9	19.2	19.9	19.1
Increase	..	5.3	15.0	16.0	19.5	17.9	20.6
Unfederated Malay States							
Birth	..	..	36.5	37.3	39.5	38.1	42.3
Death	..	..	21.4	22.9	23.1	20.8	21.1
Increase	..	..	15.1	14.4	16.4	17.3	21.2
China (b)		(1929-31)					
Birth	..	38.3	..	..	..	..	..
Death	..	27.1	..	..	..	..	..
Increase	..	11.2	..	..	..	..	..
French Indo-China (c) (Cochin China only)							
Birth	..	35.5	36.3	36.7	37.1	..	..
Death	..	25.8	22.6	25.3	24.2	..	..
Increase	..	9.7	13.7	11.4	12.9	..	..
Japan (d)							
Birth	34.7	33.5	31.6	31.6	29.9	30.7	26.7
Death	21.1	19.3	17.9	16.8	17.5	17.0	17.5
Increase	13.6	14.2	13.7	14.8	12.4	13.7	9.2
Japanese Colonies							
Korea		(1927-29)					
Birth	..	37.4	32.5	29.3	28.6	..	..
Death	..	22.7	20.0	19.7	19.7	..	..
Increase	..	14.6	12.5	9.6	8.9	..	..
Formosa		(1927-29)					
Birth	..	44	45.1	45.3	43.8	..	..
Death	..	22	20.6	20.3	19.9	..	..
Increase	..	22	24.5	25.0	23.9	..	..
Netherlands Indies (e) (Java & Madura only. Natives only.)			(1932-35)				
Birth	..	..	26.9	25.0	26.0	28.3	..
Death	..	..	17.5	18.2	17.7	18.8	..
Increase	..	..	9.4	6.8	8.3	9.5	..
Philippines (f)							
Birth	..	35.6	35.4	35.1	36.6	38.0	..
Death	..	19.7	18.5	19.5	18.0	18.8	..
Increase	..	15.9	16.9	15.6	18.6	19.2	..
U.S.S.R. (g)	(1911-13)	(1926-28)					
Birth	46.8	40.0	..	..	..	..	..
Death	30.5	17.4	..	..	..	..	..
Increase	16.3	22.6	..	..	..	..	..
OCEANIA							
Australia (h)							
Birth	26.6	21.0	16.9	16.6	17.1	17.4	17.5
Death	10.8	9.3	9.0	9.5	9.4	9.4	9.6
Increase	15.8	11.7	7.9	7.1	7.7	8.0	7.9
New Zealand (i)							
Birth	27.3	19.7	17.0	16.2	16.6	17.3	18.0
Death	9.7	8.6	8.2	8.2	8.7	9.1	9.7
Increase	17.6	11.1	8.8	8.0	7.9	8.2	8.3

(a) *Population Index*, July 1939.

(b) Buck, J. L., *Land Utilization in China*, Chicago, 1937.

(c) *Annuaire Statistique de l'Indochine*. Asiatic population only.

(d) *Dainippon Teikoku Tokui Nenkan*. Death rates for 1937 and 1938 do not include military mortality in China.

Footnotes to Table 2 continued on Page 7

TABLE 2. PACIFIC AREA: BIRTH AND DEATH RATES PER 1,000 POPULATION, AND RATE OF INCREASE

Countries	1909-13 or 1910-14 Average	1925-29 or 1926-30 Average	1930-34 or 1931-35 Average	1935	1936	1937	1938
THE AMERICAS							
Canada (j)							
Birth	..	24.1	21.4	20.3	20.0	19.8	20.4
Death	..	11.1	9.7	9.7	9.7	10.2	9.5
Increase	..	13.0	11.7	10.6	10.3	9.6	10.9
Chile (k)							
Birth	39.5	41.6	34.0	34.1	34.6	33.5	33.6
Death	31.3	25.8	24.7	25.0	25.3	24.0	24.6
Increase	8.2	15.8	9.3	9.1	9.3	9.5	9.0
Colombia (l)							
Birth	..	30.0	30.0	31.8	29.3	30.6	31.8
Death	..	14.0	14.7	15.2	15.4	15.3	17.2
Increase	..	16.0	15.3	16.6	13.9	15.3	14.6
Costa Rica (m)							
Birth	..	44.6	42.8	43.2	43.0	42.2	43.1
Death	..	21.1	20.0	21.9	20.0	18.2	16.7
Increase	..	23.5	22.8	21.3	23.0	24.0	26.4
Guatemala (n)							
Birth	..	45.2	42.1	40.5	40.3	39.3	32.5
Death	..	22.0	22.7	23.1	20.9	20.7	18.4
Increase	..	23.2	19.4	17.4	19.4	18.6	14.1
Mexico (o)							
Birth	..	36.7	41.9	41.3	42.0	40.0	39.2
Death	..	25.6	24.1	22.0	23.0	23.9	22.4
Increase	..	11.1	17.8	19.3	19.0	16.1	16.8
Peru (p)							
Birth	..	24.4	27.5	27.3	..	..	..
Death	..	10.2	11.7	12.9	..	..	..
Increase	..	14.2	15.8	14.4	..	..	..
Salvador (q)							
Birth	49.6	45.1	41.0	38.7	41.7	40.4	41.9
Death	26.3	23.7	23.0	24.2	20.3	18.9	17.5
Increase	23.3	21.4	18.0	14.5	21.4	21.5	24.4
U.S.A., Continental (r)							
Birth	..	19.7	17.2	16.9	16.7	17.0	17.6
Death	..	11.8	10.9	10.9	11.5	11.2	10.6
Increase	..	7.9	6.3	6.0	5.2	5.8	7.0
U.S.A., Whites							
Birth	..	19.4	16.8	16.7	..	..	..
Death	..	11.2	10.6	10.7	..	..	..
Increase	..	8.2	6.2	6.0	..	..	..
U.S.A., Colored							
Birth	..	22.6	20.3	18.4	..	..	..
Death	..	17.0	13.4	12.8	..	..	..
Increase	..	5.6	6.9	5.6	..	..	..
U.S.A., Possessions							
Hawaii (s)							
Birth	..	33.6	26.3	24.0	22.8	22.1	..
Death	..	11.7	9.4	8.4	8.5	9.3	..
Increase	..	21.9	16.9	15.6	14.3	12.8	..

(e) *Statistical Year-Book of the League of Nations, 1937-38, Population Index; and Annual Epidemiological Report, 1937.*

(f) *Population Index, July 1939.*

(g) *Narodnoye Khozyaystvo*, as quoted in the *Economic Handbook of the Pacific Area*.

(h) *Population Index, July 1939; Statistical Year-Book of the League of Nations.*

(i) *Ibid.*

(j) *The Canada Year Book; Population Index.*

(k) *Anuario Estadístico, 1928*, p. 11, for 1909-13 averages. Others from *Population Index, July 1939.*

(l) *Population Index.*

(m) *Statistical Year-Book of the League of Nations, 1938-39.*

(n) *Population Index, July 1939. (Memoria de Dirección General de Estadística, 1934, gives different figures for 1925-34.)*

(o) *Ibid.*; and *Population Index.*

(p) *Extracto Estadístico, 1934-35*, p. 215.

(q) 1909-13 averages from *Boletín Estadístico*, Oct. 1934. Others from *Population Index, July 1939.*

(r) *Population Index.* The figures for 1939: birth 17.5, death 10.7; increase 6.8.

(s) *Statistical Year-Book of the League of Nations, 1937-38.*

**TABLE 3. COMPARATIVE RATES OF POPULATION GROWTH IN FOUR
PACIFIC AREA COUNTRIES⁷**
(Average Annual Rates of Increase in Percentages)

PERIOD	UNITED STATES	CANADA	AUSTRALIA	NEW ZEALAND
1850 to 1900 or 1901	2.4	1.62	4.47	6.8
1900 or 1901 to 1930-1931	1.61	2.15	1.84	2.24

**TABLE 4. PACIFIC AREA: PROPORTION OF TOTAL POPULATION
IN DIFFERENT AGE GROUPS**
(Percentages)

COUNTRY	YEAR	AGE		
		0-14	15-49	50 and over
ASIA				
British Malaya	1931	31.3	59.2	9.5
Japan	1925	36.7	48.3	15.0
	1930	36.7	48.1	15.2
	1935	36.9	47.9	15.2
Thailand	1929	39.1	49.6	11.3
U.S.S.R.	1926	37.2	49.9	12.9
	1931	36.3	50.7	13.0
	1939	36.2	50.8	13.0
OCEANIA				
Australia	1911	31.6	54.7	13.7
	1921	31.7	52.1	16.2
	1933	27.5	53.3	17.2
	1937	25.5	54.1	20.4
New Zealand	1911	31.3	55.0	13.7
	1926	29.9	53.4	16.7
	1936	25.5	52.6	21.9
THE AMERICAS				
Canada	1911	32.9	52.5	14.6
	1921	34.3	50.6	15.1
	1931	31.7	51.6	16.7
Chile	1930	38.2	51.2	10.6
Colombia	1918	36.1	46.7	17.2
Honduras	1930	42.5	48.4	9.1
Mexico	1921	38.4	50.6	11.0
	1930	37.5	51.6	10.9
U.S.A.	1910	32.1	53.8	14.1
	1920	31.8	52.8	15.4
	1930	29.4	53.4	17.2
Hawaii	1910	29.5	62.1	8.4
	1920	35.5	54.5	10.0
	1930	36.2	57.2	6.6

⁷ Carr-Saunders, A.M., *World Population*, Oxford, 1936, p. 26.

Japan and the United States each older age group is numerically smaller than the preceding one. The tables also show a considerable contrast between Australia and New Zealand, on the one hand, and Malaya, Thailand and the various Latin American countries on the other as far as the proportion of people over 50 is concerned. The mean expectation of life in the first group is much higher than in the second, an expression of the difference in health conditions and standards of living.

Rural and Urban Population: Urbanization as an aspect of the population problem deserves greater attention than it has so far been accorded. It is, however, rather difficult to obtain comparable figures. Most census returns classify the population as rural and urban, but the classifications are built upon different criteria in different countries. The first footnote of Table 6 explains the methods of classification in the various countries. While the figures in that table do not permit a comparison between countries, they are useful for studying the changes within one country over a period of several decades.

Urbanization, that is the drift of people from small rural communities concerned primarily with agriculture to urban centers chiefly interested in manufacture and trade, has become very marked in such Pacific countries as the United States, Canada, New Zealand, Australia and Japan. The growth of a country's urban population is important and far-reaching in effect because of the fact that the birth rate of the urban population generally declines much more than the birth rate of rural communities. As a result, nearly all large cities are dependent upon rural-urban migration for their future growth or even for the maintenance of a stationary population. In some large American cities the birth rate has decreased to 12 per thousand, and the trend continues downward.⁸

In contrast to the figures in Table 6, those of Table 7, giving the proportion of population in cities of 10,000 or more inhabitants, are comparable to a certain degree. It must again be remembered, however, that the definition of city is not the same in all the countries considered. Outstanding in this table is Australia where, in 1933, 55.1% of the total population was concentrated in cities of over 10,000 people. The degree of urbanization in such tropical regions as British Malaya or Hawaii is surprisingly high as compared with the Netherlands Indies. One or two large cities with a very large share of the total population account for this high proportion of city people.

Occupational Distribution: Table 8 on occupational distribution is a further index of urbanization insofar as that is associated with industrialization and the growth of a commercial and professional class. It also suggests the manner in which the resources of each country are exploited—whether predominantly by means of agriculture, forestry or mining, or by means of manufacturing or industrial enterprise—and accordingly what these resources are. These figures are not necessarily an indication of the economic development of each country, although in certain cases they may have bearing on that point. If used in connection with

⁸ Baker, O. E., "Rural-Urban Migration and the National Welfare," *Annals of the Association of American Geographers*, Vol. XXIII, 1933.

TABLE 5. PACIFIC AREA:

(In thousands and per cent.)

COUNTRIES	DATE OF ESTIMATE OR CENSUS	AGE GROUPS			AGE GROUPS		
		0-4	5-9	10-14	15-19	20-24	25-29
ASIA							
British Malaya (a)	1931 numbers percentages	504 11.6	497 11.4	368 8.4	353 8.1	432 9.9	493 11.3
Japan (b)	1925 numbers percentages	8,265 13.8	6,924 11.6	6,735 11.3	5,885 9.9	5,061 8.5	4,394 7.4
	1935 numbers percentages	9,329 13.5	8,531 12.3	7,685 11.1	6,640 9.6	6,070 8.8	5,241 7.6
Korea (c)	1930 numbers percentages	3,360 16.0	2,719 12.9	2,266 10.8	2,107 10.0	1,793 8.5	1,440 6.8
Thailand (d)	1929 numbers percentages	0-5 1,782 15.5	6-10 1,432 12.4	11-15 1,288 11.2	16-20 1,289 11.2	21-25 1,030 8.9	26-30 996 8.7
U.S.S.R. (e)	1931 numbers percentages	0-3 20,127 12.4	4-10 27,461 16.9	11-14 11,465 7.0	15-19 17,271 10.6	..	20-39 50,673 31.2
	1939 numbers percentages	0-7 31,412 18.6	8-11 16,409 9.7	12-14 13,336 7.9	15-19 15,124 8.9	20-29 30,639 18.0	..
OCEANIA							
Australia (f)	1933 numbers percentages	569 8.6	627 9.5	625 9.4	613 9.2	582 8.8	532 8.0
New Zealand (g)	1937 numbers percentages	533 7.8	584 8.5	631 9.2	614 9.0	613 9.0	570 8.3
	1926 numbers percentages	134.4 10.0	132.8 9.9	134.0 10.0	124.3 9.3	112.8 8.4	103.7 7.7
	1936 numbers percentages	116.7 7.8	128.4 8.6	135.5 9.1	132.3 8.9	133.5 9.0	125.0 8.4
THE AMERICAS							
Canada (h)	1931 numbers percentages	1,075 10.4	1,133 10.9	1,074 10.4	1,039 10.0	911 8.8	786 7.6
Chile (i)	1930 numbers percentages	590 13.8	535 12.5	469 10.9	469 10.9	417 9.7	362 8.4
Colombia (j)	1918 numbers percentages	830 14.6	707 12.4	631 11.1	524 9.2	491 8.6	461 8.1
Guatemala (k)	1921 numbers percentages	303 15.1	5-14 455 22.7	..	15-20 314 15.7	..	21-30 329 16.4
Honduras (l)	1935 numbers percentages	162 16.8	132 13.7	110 11.4	97 10.0	92 9.6	82 8.5
Mexico (m)	1930 numbers percentages	2,511 15.1	2,293 13.8	1,686 10.2	1,684 10.2	1,577 9.5	1,460 8.8
Nicaragua (n)	1920 numbers percentages	0-9 202 31.7	10-19 151 23.7	20-29 117 18.3			
Panama (o)	1930 numbers percentages	0-6 91 19.5	7-15 102 21.8	16-20 49 10.4	21-30 80 17.1		
U.S.A. (p)	1910 numbers percentages	10,631 11.6	9,761 10.6	9,107 9.9	9,004 9.9	9,057 9.8	8,180 8.9
	1930 numbers percentages	11,444 9.3	12,608 10.3	12,005 9.8	11,552 9.4	10,870 8.9	9,834 8.0
U.S.A. Possessions							
Hawaii (q)	1930 numbers percentages	48.2 13.1	47.1 12.8	38.0 10.3	33.5 9.1	42.8 11.6	36.7 10.0
Alaska (r)	1930 numbers percentages	6.4 10.7	6.1 10.3	5.1 8.6	4.7 8.0	4.3 7.2	4.2 7.0

(a) *Statistical Year-Book of the League of Nations, 1937/38.*(b) *Statistical Year-Book of the League of Nations, 1935 figures from The Japan Year-Book, 1939-40, p. 44 ff.*(c) *Census Reports, 1930, Government General of Tyosen, Oct., 1934, Table 21, p. 59.*(e) *Narodnoye Khozyaystvo, S.S.S.R., 1932, and Moscow News, June 5, 1930. Figures exclude people of the Far North.*(f) *Official Year Book of the Commonwealth of Australia.*(g) *Statistical Year-Book of the League of Nations, 1937/38.*

POPULATION BY AGE GROUPS

11

(ages of total population)

Age Groups			Age Groups			Over 60 (over 55)	Un- distributed	TOTAL
30-34	35-39	40-44	45-49	50-54	55-59			
470 10.8	344 7.9	316 7.2	174 4.0	202 4.6	.. ..	206 4.7	..	4,359 100%
3,716 6.2	3,449 5.8	3,222 5.4	3,055 5.1	2,451 4.1	1,991 3.3	4,589 7.7	..	59,737 100%
4,632 6.7	4,046 5.8	3,406 4.9	3,114 4.5	2,833 4.1	2,571 3.7	5,155 7.4	..	69,254 100%
1,443 6.9	1,246 5.9	1,096 5.2	921 4.4	759 3.6	621 2.9	1,286 6.1	..	21,058 100%
31-40 1,378 11.9		41-50 1,017 8.9		51-60 755 6.6		540 4.7	3 ..	11,506 100%
..		7,761 4.8	6,668 4.1	50-59 10,112 6.2		10,606 6.5	..	162,143 100%
30-39 25,333 14.9		40-49 15,236 9.0		10,867 6.4		11,129 6.6	33 ..	169,519 100%
487 7.3	464 7.0	455 6.9	407 6.1	333 5.0	260 3.9	657 9.9	19 0.3	6,630 100%
517 7.6	475 7.0	464 6.8	438 6.4	381 5.6	295 4.3	656 9.6	..	6,831 100%
94.9 7.1	98.6 7.3	95.6 7.1	87.5 6.5	66.3 4.9	51.1 3.8	105.2 7.8	3.3 0.3	1,344.5 100%
109.5 7.3	101.8 6.8	91.0 6.1	93.0 6.2	89.3 6.0	78.5 5.3	155.5 10.4	1.6 0.1	1,491.5 100%
709 6.8	688 6.6	646 6.2	585 5.6	489 4.7	367 3.5	870 8.4	4 ..	10,377 100%
288 6.7	269 6.3	218 5.1	178 4.1	150 3.5	99 2.3	244 5.7	..	4,287 100%
382 6.7	331 5.8	281 4.9	192 3.4	178 3.1	104 1.8	310 5.4	276 4.8	5,697 100%
30-40 255 12.7		40-50 161 8.0		50-60 99 4.9		90 4.5	..	2,005 100%
60 6.3	53 5.7	43 4.5	35 3.6	28 2.9	21 2.1	46 4.8	1 0.1	962 100%
1,124 6.8	1,030 6.2	807 4.9	635 3.8	544 3.3	325 2.0	872 5.3	3 ..	16,553 100%
30-39 74 11.6		40-49 46 7.2		50-59 29 4.5		17 3.0	2 ..	638 100%
31-40 61 13.1		41-50 40 8.5		51-60 20 4.3		12 2.9	12 2.5	467 100%
6,972 7.6	6,396 7.0	5,261 5.7	4,469 4.9	3,901 4.2	2,787 3.0	6,243 6.7	..	91,972 100%
9,120 7.4	9,209 7.5	7,990 6.5	7,042 5.7	5,976 4.9	4,646 3.8	10,385 8.5	..	122,775 100%
27.5 7.5		40-49 29.1 7.9		50-59 16.8 4.6		7.6 2.0	0.1 ..	368.3 100%
3.8 6.3	8.8 14.9	7.8 13.2		5.1 8.6		2.9 4.9	1 0.2	59.3 100%

(l) Statistical Year-Book of the League of Nations, 1937/38.

(j) Ibid. Does not include Indians estimated at 158,000.

(k) Censo de la Republica, pp. 251-2.

(l) Censo General de Poblacion, June 30, 1935, p. 7.

(m) Quinto Censo de la Poblacion, pp. 47-48.

(n) Statistical Year-Book of the League of Nations, 1930/31.

(o) Censo Demografico, 1930, p. 19.

(p) Statistical Abstract of the United States.

(q) Statistical Year-Book of the League of Nations, 1937/38.

(r) U.S. Bureau of Census.

other population figures and with data on the exploitation of land, water and mineral resources, occupational distribution reflects the current adjustment of people to the resources at hand.

Migration: While Table 9 gives the number of nationals of Pacific countries residing in other Pacific countries at the census years, 1910, 1920 and 1930, more recent figures and trends of migrations will be found under individual countries; internal population movements have been more conspicuous than international ones. Numerically, and perhaps in social consequences as well, the greatest of all population movements among Pacific countries, or for that matter in the world, has been the exodus of Chinese since 1937 from the areas invaded by Japan to western, southwestern and northwestern China, to the city of Shanghai and to Manchuria. The movement is still continuing and has been of such gigantic proportions that, occurring in war time, no accurate count is available. Estimates of those involved vary all the way from 20 to 60 millions.

Of much smaller proportions and resulting from economic rather than military conditions, the migration within the United States from the "dust bowl" of Oklahoma, Texas and Kansas to California has nevertheless been a prominent movement of the 1930's. Other internal shifts are also noted in later sections of this chapter; they include the government-sponsored redistribution of population in the colonial areas of Indo-China, Netherlands India and the Philippines, and the enormous increase in the population of Siberia.

If military conquest is not considered as having alienated that portion of Chinese territory, the renewed migration of Chinese to Manchuria may also be recorded as an important internal population shift. While the main stream of coolie labor from North China to Manchuria is seasonal, the net figure of those remaining in 1938 was as high as 240,000.

B. POPULATION DATA FOR INDIVIDUAL COUNTRIES

There follow sections on individual countries. The topics treated under each country vary according to the particular population problems confronting that nation and the availability of material, but it will be found that certain questions, such as migration, immigration legislation and racial or national composition of the population, are included wherever pertinent. The sequence in which the countries are taken up is determined by their geographic location. First come the countries on the Asiatic continent, then the countries of Oceania and finally those of the Western Hemisphere.

Footnotes to Table 6—continued.

(k) 1907 and 1920 figures from *X Censo de la Poblacion Efectuado el 27, Nov. 1930*, Vol. 1, p. 56. 1930 figures from *Sinopsis Geografica—Estadística de la República de Chile, 1933*.

(l) *Anuario de Estadística General, 1928*, p. 227. Totals do not include Comisarias.

(m) *Estadística y Censos*, March 1939, p. 35.

(n) *Censo 1921*, Vol. 2, p. 21.

(o) *Censo de Poblacion, 1935* p. 8.

(p) *Quinto Censo de Poblacion, 1930*, p. 40.

(q) *Censo Demografico, 1930*, pp. 173-181.

(r) *Anuario de Estadístico, 1933*, p. 33. 1937 figures from Special Report of Consulate.

(s) *Statistical Abstract of the United States*.

(t) *Ibid.*

TABLE 6. PACIFIC AREA: RURAL AND URBAN POPULATION^a 13
(Percentages)

COUNTRIES	1910 OR 1911		1920 OR 1921		1930 OR 1931		LATER YEAR	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
ASIA								
British Malaya (a)	75	25	72.3	27.7	70.5	29.5		
Straits Settlements	43.1	56.9	40.5	59.5	39.3	60.7		
Federated Malay States	78.5	21.5	77.6	22.4	74.6	25.4		
Indo-China (b)					90-95	5-10		
Japan Proper (c)	(1913) 50.4	49.6	48.4	51.6	39.9	60.1	(1935) 35.5 (1936) 88.3 (1936) 65.6	64.5 11.7 34.4
Korea (d)								
Formosa (e)								
Netherlands Indies (f)					92.5	7.5		
U.S.S.R. (g)	85.7	14.3	84.2	15.8	79.4	20.6	(1939) 67.2	32.8
OCEANIA								
Australia (h)	51.3	48.7	37.3	62.1			(1933) 35.9	63.8
New Zealand (i)	49.4	50.1	43.6	56.0			(1936) 40.4	59.3
THE AMERICAS								
Canada (j)	54.6	45.4	50.5	49.5	46.3	53.7		
Chile (k)	56.8	43.2	53.6	46.4	50.6	49.4		
Colombia (l)					(1928) 69.6	(1928) 30.4		
Ecuador (m)							(1936) 65.3	34.7
Guatemala (n)			73.3	26.7				
Honduras (o)							(1935) 69.8	30.2
Mexico (p)			68.9	31.1	66.5	33.5		
Panama (q)					65.1	34.9		
Salvador (r)					60.9	39.1	(1937) 62.0	38.0
U.S.A. Continental (s)	54.2	45.8	48.6	51.4	43.8	56.2		
U.S.A. Possessions, Hawaii (t)			63.4	36.6	57.4	42.6		

^a Figures in the vertical columns are not comparable on account of the different methods of computing urbanization employed in each country. In *British Malaya* "urban" population means population resident in towns of over one thousand inhabitants. In *Japan* "urban" population is that part of the people living in settlements with more than 5,000 inhabitants. In *Korea* and *Formosa* "urban" includes people living in towns with more than 10,000; no clear definition of "urban" population could be found for the *Netherlands Indies* or for the *U.S.S.R.*; in *Australia* "urban" includes the population of metropolitan divisions and of urban provincial districts designated for the purpose of local government. In *New Zealand* "urban" population means the population in cities and boroughs, while "rural" population covers counties, all town districts and extra county islands. In *Canada* "urban" includes the population residing in cities, towns, and incorporated villages. In *Chile* "urban" refers to the population of towns of over 1,000 inhabitants; in *Mexico* people living in towns with 2,500 and more are considered as "urban" population; in the *United States* "urban" refers to incorporate places having 2,500 or more inhabitants until 1930 when the definition of "urban" was extended to include townships and similar political units having a total population of 10,000 and a density of 1,000 per square mile; in *Hawaii* "urban" includes the two cities of Honolulu and Hilo.

(a) Vlieland, C. A. *A Report on the 1911 Census* London 1932.

(b) Courton, P. *L'Indochine française*, Hanoi 1922, p. 15.

(c) Japanese Census Reports. For administrative purposes, all of Japan proper is divided into cities, towns and villages; persons residing in what would be known as rural districts in other countries belonging, as the case may be, to the nearest cities, towns and villages. *The Japan Year Book*, 1939 40, p. 52. This source reports an urban population in 12 cities of 22,655,920, or 32.7%, in 1935 and an estimated urban population in 148 cities of 25,946,700, or 35.9%, in 1938.

(d) Takami, Tokes.

(e) *Ibid*.

(f) *Census of 1930 in the Netherlands Indies*, Vol. VIII.

(g) Figures for 1910 calculated by I. Volkov in his *Dynamics of Population of the U.S.S.R. for 80 years*, Moscow, 1930 (in Russian). Figures for 1920 and 1930 are from *Narodnoye Khozyaystvo, S.S.S.R., 1932*, and figures for 1939 are from the "Official Report of the State Planning Commission," *Pravda* June 2, 1939.

(h) *Official Year Book of the Commonwealth of Australia*. Urban-metropolitan, 46.9%, and provincial, 17.0%. In addition, migratory population represented 0.3% of the population.

(i) *New Zealand Official Year Book*. Figures differ from those given in *The Economic Handbook of the Pacific Area*. Figures do not add up to 100% because they do not include migrants.

(j) *The Canada Year Book*.

Footnotes to Table 6 continued on page 12

**TABLE 7. PACIFIC AREA: PROPORTION OF POPULATION
IN CITIES OF OVER 10,000 INHABITANTS**
(Percentage of Total Population)

COUNTRY	1910 or 1911	1920 or 1921	INTERMEDIATE	1930 or 1931	LATER YEAR
ASIA					
British Malaya (a)	.	21.1	..	23.2	..
Japan Proper (b)	27.6 (1913)	32.2	36.6 (1925)	40.5	45.9 (1935)
Korea (c)	.	..	.	.	10.3 (1935)
Netherlands Indies (d)	..	..	6.4 (1927)	7.5	..
U.S.S.R. (e)	.	..	14.3 (1926)	..	22.8 (1935)
OCEANIA					
Australia (f)	..	.	..	.	55.1 (1933)
New Zealand (g)	36.4	43.7	..	..	47.4 (1936)
THE AMERICAS					
Canada (h)	28.4	32.2	..	37.3	..
Chile (i)	.		..	38.1	
U.S.A. (j)	37.0	42.4		47.6	
Hawaii (k)	27.1		.	42.6	..

- (a) Vileland, C.A., *A Report on the 1931 Census*, London, 1932.
 (b) *Dainippon Teikoku Nenkan*. Figure for 1935 from *The Japan Year Book*, 1939-40, p. 52.
 (c) *Cbozen Sotokajyu Tokai Nempo*.
 (d) *Census of 1930 in the Netherlands Indies*, Vol VIII. Includes population of municipalities and towns, very few of which have a population of less than 10,000. Figure for 1927 from *Statistical Abstract for the Netherlands East Indies*.
 (e) *Statisticheskoe Sostoyaniye S.S.S.R.*, 1936.
 (f) *Official Year Book of the Commonwealth of Australia*.
 (g) *New Zealand Official Year-Book*.
 (h) *The Canada Year Book*.
 (i) *Sinopsis Estadística Geográfica de la República de Chile*, 1933, p. 46.
 (j) *Statistical Abstract of the United States*.
 (k) *Ibid*.

Footnotes to Table 8—continued

- (d) *Takumu Tokai*. Figures given in this source for total employed population are the same as those for total population.
 (e) Agriculture and forestry.
 (f) Aquatic products and production of salt.
 (g) *Manbukoku Sangyo Gaikan*, 1936.
 (h) Agriculture and forestry.
 (i) Fishing only.
 (j) *Indiseb Verslag*, 1935, pp. 133-136.
 (k) *Bulletin of the Bureau of Labor*.
 (l) *Statistical Year Book of the Kingdom of Siam*.
 (m) Agriculture and forestry.
 (n) Fishing only.
 (o) *Vysotsuznaya Perepis' Naseleniya*, 1926.
 (p) *Official Year Book of the Commonwealth of Australia*.
 (q) *International Labour Review*, Vol XXVIII, pp. 712-713.
 (r) *The Canada Year Book*.
 (s) *Censo de la Poblacion*, Vol 3. The 1920 data are not entirely comparable to those of 1930. Classifications differ. In the 1920 Census persons were listed under the occupation in which they were engaged at the time of the census but under their customary occupation. The unemployed were included under their last occupation.
 (t) Agriculture and fishing.
 (u) Excluding 122,654 unemployed. If included the percentage would be 31.8.
 (v) *Quinto Censo de la Poblacion*, 1930.
 (w) *Statistical Abstract of the United States*. Includes persons ten years old and over.
 (x) *United States Census*, 1920, Vol IV, for 1910 and 1920. *United States Census*, 1930, *Outlying Territories and Possessions*, for 1930.
 (y) *Ibid*.

TABLE 8. PACIFIC AREA: PROPORTION OF PERSONS GAINFULLY EMPLOYED IN VARIOUS OCCUPATIONS
(Expressed as percentages of total gainfully employed)

COUNTRY	DATE	AGRICULTURE	FISHING, FORESTRY, TRAPPING	MINING	MANUFACTURING	TRANSPORTATION AND COMMUNICATION	TRADE AND COMMERCE	PROFESSIONS AND PUBLIC SERVICE	DOMESTIC SERVICE	CLERICAL	CONSTRUCTION	UNKNOWN	GAINFULLY EMPLOYED AS PERCENTAGE OF TOTAL POPULATION
ASIA													
British Malaya (a)	1931	60.7	..	12.3		6.3	10.7	3.2	6.8	..	..	..	45.3
French Indo-China (b)	1929	36.8	..	24.0	39.2	..	..	..	..	..	..	..	..
Japan Proper (c)	1920 1930	51.8 47.7	2.0 1.8	1.6 0.8	19.4 19.2	3.4 3.7	12.1 15.1	5.4 6.9	2.4 2.6	..	..	1.9 1.9	48.7 46.0
Korea (d)	1930-34 average 1936	77.7 (e) 75.0	1.5 (f) 1.5	2.5 3.2		6.8 7.6		3.8 4.0	..	..	..	1.7 1.8	..
Manchoukuo (g)	1935												
Chinese & Mongols		74.5 (h)	0.2 (i)	0.9	7.3	2.6	8.5	2.9	..	..	..	..	36.0
Japanese		2.6	0.1	3.9	16.2	21.0	30.5	22.2	..	..	..	..	46.9
Koreans		87.2	..	0.9	1.8	1.1	5.4	1.0	..	..	..	..	55.2
Netherlands India (j)	1930	65.8	1.3	0.3	10.6	1.5	6.2	3.3	1.6	..	..	..	35.3
Philippines (k)	1927	89.1	2.2	0.1	3.9	4.1		0.4	..	..	..	..	24.3
Thailand (l)	1929	83.1 (m)	1.1 (n)	..	2.2	..	6.7	2.1	4.9	..	..	..	65.4
U.S.S.R. (o)	1926	86.4	..	..	5.5	1.6	1.4	4.9	..	..	0.4	..	57.0
OCEANIA													
Australia (p)	1921 1933	20.5 17.4	1.7 1.3	2.8 2.2	19.0 16.2	8.8 7.1	14.1 14.3	9.2 7.6	9.0 7.7	..	9.9 10.3	..	43.2 47.6
New Zealand (q)	1936	24.8		1.6	25.2	7.4	12.2	15.0	9.9	..	..	..	43.4
NORTH AND SOUTH AMERICA													
Canada (r)	1911 1921 1931	34.3 32.8 26.7	2.9 2.2 2.5	2.3 1.6 1.8	18.1 17.5 16.6	8.0 8.4 7.8	11.4 11.8 12.3	7.3 10.0 6.2	7.7 6.7 7.7	..	9.0 9.0 6.5	..	37.8 36.1 37.8
Chile (s)	1920 1930	40.1 (t) 40.8 (t)	..	4.6 6.2	30.2 23.8	5.7 5.7	10.1 11.9	4.3 6.2	..	..	..	..	32.9 28.9 (n)
Mexico (v)	1910 1921 1930	68.3 71.4 70.2	..	1.6 0.6 1.0	19.4 10.9 13.4	1.1 1.2 2.1	4.7 5.6 5.3	2.5 2.5 4.0	..	..	..	2.4 7.8 4.0	34.7 34.1 31.2
U.S.A., Continental (w)	1910 1920 1930	33.2 25.6 21.4	0.6 0.5	2.5 2.6 2.0	27.8 30.8 28.9	6.9 7.4 7.9	9.5 10.2 12.5	5.6 7.0 8.5	9.9 8.1 10.1	4.6 7.5 8.2	..	..	41.5 39.4 39.8
Alaska (x)	1910 1920 1930	11.4 19.7 4.3	..	28.4 19.7 17.2	22.9 16.2 10.9	8.7 8.9 10.8	3.6 5.2 6.3	6.5 8.9 8.4	16.8 18.9 22.0	1.8 2.4 ..	..	..	62.5 49.1 47.4
Hawaii (y)	1910 1920 1930	55.7 50.3 40.1	..	0.3 0.2 0.1	15.2 16.3 14.9	6.6 7.0 6.2	5.8 6.6 6.9	5.4 9.3 18.3	9.3 7.6 8.5	1.8 2.9 3.9	..	..	52.7 43.7 41.9

(a) Vlieland, C. A., *A Report on the 1931 Census*, London, 1932.

(b) International Labour Office, *Labor Conditions of Indo-China*, 1938, p. 294. Data include wage earners only. It is estimated that nine-tenths of the population are dependent on agriculture. Of the wage earners, 42,664 in agriculture receive rice in addition to wage, 16,079 of those in industry receive rice plus wage.

(c) Japanese Census Reports.

Footnotes to Table 8 continued on page 14

1. UNION OF SOVIET SOCIALIST REPUBLICS

Size of the Population: Three population censuses have been held in Russia which more or less satisfy the student of population—in 1897, 1926 and 1939. The complete findings of the last one are not available at the time of writing, but enough data have been published to indicate the principal trends. The census of 1897 cannot be compared directly with that of 1926 because of the changes of frontiers and the unprecedented movement of population from 1914 to 1923. (References to

TABLE 9. NATIONALS OF PACIFIC COUNTRIES

NATIONALITY	YEAR	AUSTRALIA	BRITISH MALAYA	CANADA	CHINA PROPER (a)	MANCHURIA (b)	HONGKONG	FRENCH INDO-CHINA	JAPAN PROPER NR
Australians	1910	.	..	2,655P	.	.	.	..	5N
	1920	..	..	2,855P	..	..	.	..	..
	1930	.	.	3,565P	.	.	..	..	43N
Canadians	1910	..	..	.	.	.	.	..	60N
	1920	3,550P	..	..	.	.	.	..	121N
	1930	3,920P	54P	..	.	61N	.	..	180N
Chinese	1910	.	770,226R	27,083P	..	.	444,664R	..	8,190Nk
	1920	13,799N	916,254R	36,924R	.	.	612,310R	..	15,099NR
	1930	7,792N	1,174,081R	42,037P	.	.	821,429R	385,000	30,870NR
Japanese	1910	.	.	8,425P	80,219N	.	.	..	..
	1920	2,639N	6,549R	11,650P	239,180N	.	1,585R	..	..
	1930	2,084N	5,317R	12,261P	280,621N	90,025N	2,205R	276R	..
Koreans	1910	..	..	.	.	.	..	.	..
	1920	..	..	.	.	.	..	.	..
	1930	.	.	.	.	701,161N	.	..	..
New Zealanders	1910	31,868P	.	.	.	.	.	..	..
	1920	38,611P	..	..	.	..	.	..	1N
	1930	45,963P	.	.	.	..	.	..	..
Filipinos	1910	..	.	.	..	.	.	..	..
	1920	..	.	.	..	.	.	..	..
	1930	..	252P	.	..	.	.	..	..
Russians	1910	.	.	89,984P	56,765N	.	.	..	132NR
	1920	2,317N	..	112,412P	77,891N	.	36N	..	897NR
	1930	2,055N	..	128,166P	66,479N	70,685N	106N	.	1,681NR
Americans	1910	.	.	303,680P	5,340N	.	.	.	1,794N
	1920	6,604P	.	374,032P	6,023N	.	470N	.	2,252N
	1930	6,054P	343P	344,574P	8,637N	226N	970N	119P	2,075N
Mexicans	1910	.	.	.	.	.	.	..	8N
	1920	..	.	..	18N	.	.	..	22N
	1930	..	..	..	4N	.	12N	.	16N
Chileans	1910	.	.	..	.	.	..	.	10N
	1920	.	..	..	.	.	..	..	..
	1930	.	.	..	.	.	13N	..	10N

10 The above table is largely based on *World Statistics of Aliens, A Comparative Study of Census Returns 1910-1920-1930*, Studies and Reports, Series O, No. 6, International Labour Office, Geneva, 1936. Not in all cases were the censuses actually held in 1910, 1920 or 1930 but a year or two before or after these years. The definitions of "alien" in the different censuses differ considerably. Aliens are not always returned according to nationality in the legal sense. What is returned in some cases, instead of legal nationality or conjointly with it, is the country of birth, the origin or ethnical nationality, or even in some cases race in the anthropological sense. For our purposes statistics compiled on the criterion of "country of birth" present most satisfactorily the evolution of the really immigrant population, exclusive of population descended from immigrants. From the point of view of migration, states have a reciprocal interest in recording the country of birth of their inhabitants, inasmuch as this enables the number of persons born in a country and residing abroad to be ascertained, having regard if possible to nationality.

Following each figure in the table are such letters as P, N, R. P stands for "country of birth," N stands for "nationality," R stands for "race (color, civilization)"

"present-day frontiers" indicate the frontiers as of mid-1939, and exclude territories acquired thereafter.)

In 1897 the population of the Russian Empire was about 129 million. According to calculations by Russian statisticians, the population in 1900 within the present frontiers must have been 109 million. For 1914 Soviet statisticians estimate a population of 139.9 million within present-day boundaries. The census of December 1926 revealed a population of 147 million. For each year up to 1934 (with the exception of 1932) official estimates were made and by 1934 the population was supposed

RESIDING IN OTHER PACIFIC COUNTRIES¹⁰

FORMOSA	KOREA	NETHERLANDS INDIES	NEW ZEALAND	PHILIPPINE ISLANDS	THAILAND	UNITED STATES	HAWAII	MEXICO	CHINA
..	..	..	50,029P	..	..	9,035P	..	..	38N
..	..	..	48,045P	..	..	10,801P	159P	..	52N
..	..	..	..	..	..	12,720P	198P	7,779N	45N
..	..	..	1,708P	..	..	1,204,637P	..	..	48N
..	..	..	..	..	..	1,124,925P	472P	..	78N
..	..	..	..	..	..	1,286,389P	696P	..	73N
..	7,000RN	563,000R	2,611P	..	1,400,000R	56,756P	25,762P	13,203P	1,920N
22,888RN	24,695RN	809,647R	2,986P	48,802P	260,194N	43,560P	11,164P	14,813P	1,954N
45,284RN	68,122RN	1,235,070R	2,907N	110,500R	445,274N	46,129P	7,477P	18,965N	1,605N
..	100,000N	997R	..	..	..	67,744P	61,115P	2,216P	209N
153,330N	386,193N	4,118R	..	7,806P(c)	285N	81,502P	60,690P	1,828P	557N
243,872N	501,867N	7,195RN	9N	20,828R	295N	70,993P	48,425P	4,310N	670N
..	..	..	..	..	..	..	3,498P	..	..
..	..	..	..	..	..	..	2,977P	..	..
..
..
..	..	..	..	..	..	..	..	..	4N
..
..	..	282RN	..	..	..	..	18,728P	..	..
..	..	..	..	..	..	..	52,672P	..	12N
..	..	..	..	..	..	..	63,052R	..	..
..	..	..	658P	..	..	1,602,782P	..	447P	660N
..	..	..	494P	..	..	1,400,495P	342P	416P	1,320N
..	..	238N	439N	..	..	1,153,628P	250P	3,140N	1,343N
..	..	..	1,400P	..	..	..	..	20,639P	1,055N
..	773N	..	1,872P	..	..	..	..	21,740P	1,908N
..	133N	643N	1,375N	..	..	..	..	12,396N	2,078N
..	..	..	..	..	..	221,915P	..	..	173N
..	..	..	..	..	..	486,418P	..	..	183N
..	..	..	..	..	..	641,462P	..	..	209N
..
..
..

(a) Figures refer to 1913, 1928, 1931; they are estimates made by the Maritime Customs of China.

(b) *Minseifu Taken Nempo*. Figures are of June 30, 1935, and refer to foreign residents. Under Russians are included: 44,359 denaturalized (mostly Russians)
21,272 Soviet citizens
5,054 Naturalized White Russians

70,685

(c) According to a table compiled by the Japanese Ministry of Foreign Affairs (1934) quoted in *World Statistics*, p. 220, footnote 2.

to have grown to a total of 168 million. In January 1937 a census was held and it was expected that the population would amount to from 175 to 178 million. The results of this census, however, have never been published. On September 26, 1937, the authorities announced its cancellation because of the "crude errors" which deprived the census of "any scientific value." After the election of December 1937 Soviet newspapers published a new and unexpected population figure, namely 169 million, which was from 6 to 9 million below the estimate for January 1937. Some foreign observers believe that an excessive mortality, caused by starvation during the collectivization campaign, reduced the rate of growth to such an extent that the actual population remained far below the estimate, or that the population really decreased. Others think that the discrepancy is the result of a fall in the birth rate. It is quite probable that both groups are right. On the one hand, the collectivization of peasants was accompanied by great hardships; on the other hand, the growing use of contraceptives and the increase of abortions decreased the birth rate.

Population Index estimates that the rate of population growth per 1,000 persons decreased from an average of 23.4 in 1925-29 to 13.5 in 1930-34, and to an average of 4 for the period 1934 to 1937.¹ More probable is the explanation which claims that the population actually decreased in the years 1931, 1932 and 1933, and that the estimates by the Soviet statisticians were inaccurate. In recent years the population growth has regained its old strength. The preliminary results of the census of January 17, 1939, were published in June 1939, showing the total population of the U.S.S.R., excluding the Far North, to be 170,467,186.

Racial Composition: As is to be expected, a country of the size of the Soviet Union has within its borders a great number of racial groups. Table 11 lists the ten largest. It must be borne in mind that the numerical relationship is not permanent but is affected by the different birth and death rates shown by the various racial groups.

Rural and Urban Population: The changes which have taken place in the Soviet Union during the last sixteen years are reflected in the urbanization of the country. Before the World War Russia was predominantly agricultural. Her urban population (within present-day frontiers) was only about 14% of the total. In the years following 1925 the urban population grew very rapidly as a result of the voluntary or forced migration of peasants to the existing cities or to the newly developed industrial centers. The first Five-Year Plan expected a growth of the urban population of 24%; actually it increased by 12 million, or from 25 million in 1927 to 37 million in 1932, an increase of 48%.² From 1932 to 1939 the urban population increased by 18.9 million, or this time by 51.1%. If we compare the figures for 1910 with those for 1939 we find that the urban population increased by 200%, or from 18.6 million to 55.9 million, while the rural population increased only by 2.5%, from 111.8 million to 114.6 million. Practically the total in-

¹ *Population Index*, January 1939, p. 6.

² Niedermayer, Oskar Ritter, and Semionov, Yurii, *Die Sowjet Union: Eine Geopolitische Problemstellung*, Berlin, 1934, p. 40.

TABLE 10. U.S.S.R.: POPULATION, 1897-1938* (a)

YEAR	POPULATION AT BEGINNING OF YEAR (In thousands)		ANNUAL INCREASE		
	Actual	Anticipated (b)	Amount (c) (In thousands)	Rate for 1,000 Population	
				Actual (c)	Anticipated (b)
1897	106,432.3	...	1,426.2	13.4	...
1914	139,312.7	...	2,368.3	17.0	...
1918	142,579.9	...	...	...	...
1921	130,863.3	...	1,320.5	10.1	...
1922	132,183.8 (c)	...	1,320.6	10.0	...
1923	133,504.0	...	3,903.5	29.2	...
1924	137,407.9	...	3,086.2	22.5	...
1925	140,494.1	...	3,154.5	22.5	...
1926	143,648.6	...	3,379.3	23.5	...
1927	147,027.9	147,931	3,572.1	24.3	23.0
1928	150,600.0	151,326	3,687.7	24.5	23.0
1929	154,700.0	154,832	3,412.3	22.1	23.0
1930	157,700.0	158,370	2,900.0	18.4	23.0
1931	160,600.0	161,999	2,574.2	16.0	22.0
1932	163,174.2 (c)	165,579	2,574.2	15.8	22.0
1933	165,748.4	169,204	2,251.6	13.4	...
1934	168,000.0	...	666.7	4.0	...
1935	168,666.7 (c)	...	666.6	4.0	...
1936	169,333.3 (c)	...	666.7	3.9	...
1937	170,000.0 (d)	...	663.0	3.9	...
1938	170,663.0 (c)	180,700	...	...	...
1939	170,467.2 (c)	...	...	...	...

(a) Unless otherwise noted, the census statistics for 1926 and the estimates for other years are taken from the statistical abstracts published by the Tsentralnoe Statisticheskoe Upravlenie S.S.S.R. and by the Tsentralnoe Upravlenie Narodno-khozyaistvennogo Ucheta Gosplana S.S.S.R.

(b) Anticipated in the first and second Five-Year Plans

(c) Computed or estimated, not available in Soviet publications

(d) Quoted in an article by A. Y. Vyshinski, Attorney General of the Soviet Union, *Truth*, Moscow, September 27, 1937.

(e) Census, Jan. 17, 1939. Published in *Pravda*, June 2, 1939. People of the Far North excluded as the census there was taken at a later date.

TABLE 11. U.S.S.R.: RACIAL COMPOSITION OF THE POPULATION
ACCORDING TO THE 1939 CENSUS*

(Excluding the Far North, Western Ukraine and Western White Russia)

RACIAL GROUP	NUMBER	PER CENT OF TOTAL
Great Russians	99,019,929	58.41
Ukrainians	28,070,404	16.56
White Russians	5,267,431	3.11
Uzbeks	4,844,021	2.86
Tartars	4,300,336	2.54
Kazakhs	3,098,764	1.83
Jews	3,020,141	1.78
Azerbaijanians	2,274,805	1.34
Georgians	2,248,566	1.33
Armenians	2,151,884	1.27
Others	15,222,846	8.97
Total	169,519,127	100.00

* *Population Index*, January 1939, p. 6.

* *Moscow News*, June 5, 1940.

crease, therefore, occurred in the urban sector of the Russian population, while the rural population grew only slightly compared with 1910, and actually decreased by 12 million after 1929.

TABLE 12. U.S.S.R.: RURAL AND URBAN POPULATION⁵
(Within present-day frontiers)

YEAR	ABSOLUTE FIGURES (In millions)			PERCENTAGES	
	Total	Urban	Rural	Urban	Rural
1910	130.4	18.6	111.8	14.3	85.7
1914	139.9	20.4	119.5	14.6	85.4
1926, December 17	147.0	26.3	120.7	17.9	82.1
1929, January 1	154.3	27.6	126.7	17.9	82.1
1933, " 1	165.7	40.3	125.4	24.3	75.7
1939, " 17	170.5	55.9	114.6	32.8	67.2

TABLE 13. U.S.S.R.: GROUPING OF CITIES OF MORE THAN 10,000 ACCORDING TO POPULATION⁶

SIZE OF TOWNS (In thousands)	CENSUS OF DEC 17, 1926				ESTIMATE OF JAN 1, 1935			
	No of Towns	% of Total	Population (In thousands)	% of Total	No of Towns	% of Total	Population (In thousands)	% of Total
10-20	253	52.8	3,522.9	16.6	329	47.0	4,575.0	11.8
20-50	135	28.2	3,982.8	18.8	219	31.2	6,522.1	16.8
50-100	60	12.5	4,108.7	19.4	84	12.0	5,930.0	15.4
over 100	31	6.5	9,550.9	45.2	68	9.8	21,454.8	56.0
Total	479	100.0	21,165.3	100.0	700	100.0	38,481.9	100.0

TABLE 14. U.S.S.R.: GROWTH OF CITIES IN EASTERN SIBERIA⁷

CITY	CENSUS DECEMBER 1926	CENSUS JANUARY 1939	1939 AS % OF 1926
Blagoveshchensk	..	58,761	...
Cheremkhovo	14,485	65,907	455.0
Chita	61,526	102,555	156.7
Irkutsk	108,129	243,380	225.1
Khabarovsk	52,045	199,364	383.1
Komsomolsk	..	70,746	..
Petropavlovsk	47,361	91,678	193.6
Ulan-Ude	28,918	129,417	447.5
Vladivostok	107,980	206,432	191.2

⁵ Figures for 1910 and 1914 calculated by E. Volkov in *Dynamics of Population of the U.S.S.R. for 80 years*, Moscow, 1930 (in Russian). Figures for 1929 and 1933 are taken from *Sotsialisticheskoe Stroitel'stvo S.S.S.R.*, 1936, except the percentages. Figures for 1926 and 1939 are from *Pravda*, June 2, 1939.

⁶ *Sotsialisticheskoe Stroitel'stvo S.S.S.R.*, 1936.

⁷ *Moscow News*, June 5, 1940, p. 9.

There is no reason to believe that this growth of urban population has come to a standstill. In 1926 there were 91 cities with a population of over 50,000; in 1932 their number had increased to 128, and in 1935 to 152. In 1926 only one city had a population between 500,000 and 1 million, while in 1939 nine cities fell into this group; in 1926 there were 30 cities with a population of from 100,000 to 500,000; in 1939 there were already 71.

Especially interesting is the growth of large industrial towns in Siberia.

Eastward Migration within the U.S.S.R.: Russian colonization of Siberia began with the Yermak expedition which took the city of Sibir on the Irtysh in 1582. Fur and gold attracted the early immigrants, mostly Cossaks. These were followed by priests, monks and exiles.⁸ Land hunger lured great hordes of peasants from European Russia across the Urals and across Siberia along the southern border of the Taiga, but the great migration of the Russian peasants did not get into full swing until 1881. The peasants were serfs until 1861 and, as such, legally tied to the soil. Only in 1881 did the authorities give the peasants permission to settle in Siberia and start to direct the flow of land seekers.⁹ In the 1890's the colonization of Siberia became a government project and was financed by the state. From 1894 to 1914, 5,142,000 people migrated to Siberia, while 1,478,000 moved in the opposite direction in the same period.¹⁰ Table 15 shows the population growth of Siberia. Frequent changes in the administrative districts of Siberia make population figures over any period of years difficult to compare. Figures previous to the census of 1897 represent estimates.

Migration to Siberia came to a standstill during the War but was resumed at the end of 1917. It was not until 1925, however, that the Soviet Government assumed control over migration. In March 1925 a Soviet Committee of Emigration was established. In 1928 the Committee reported that 351,000 individuals had migrated under its auspices and settled on the land; by 1932 the figure had reached 700,000. Besides the registered migrants there was also a flow of colonists who moved independently and for which we have no statistics. Toward the end of the first Five-Year Plan the colonization movement practically stopped, because of the demand for industrial labor in European Russia. In 1930 the supervision of migration was transferred to the Commissariat of Labor for industrial workers. The Commissariat of Agriculture especially directed the settlement of Jews in the Jewish Autonomous Province of Birobidzhan and of former Red Army soldiers in the Far Eastern Region. Under the second Five-Year Plan the colonization work was transferred to a new Committee on Colonization under the Council of People's Commissars, charged with the redistribution of the population.

The character of migration, or redistribution of people, changed during the second Five-Year Plan when Siberia became the scene of large-scale industrial development. Naturally the labor question played

⁸ Hopper, Bruce, "Population Factors in Soviet Siberia," *Limits of Land Settlement*, p. 101 ff.

⁹ Niedermayer, *op. cit.*, pp. 19-20

¹⁰ Barnes, Kathleen, "Eastward Migration within the Soviet Union," *Pacific Affairs*, 1934, p. 397.

an important part in the industrialization, and Soviet authorities became mainly interested in the redistribution of workers who were required in the new industrial centers of Siberia. The settlement of agriculturists had to serve two purposes: the new farming communities had to supply both food and seasonal labor to the new industrial centers. "The cardinal principle in planning the new Siberia is that movement of population must be regulated by the need to exploit the natural resources and establish industries. The location of raw materials and energy determines the sites of industrial centers, which in turn dictate the location of agricultural communities for food supply, the direction of railways and roads, and the movement of individuals as builders in socialist construction."¹¹

TABLE 15. U.S.S.R.: GROWTH OF POPULATION IN SIBERIA¹²

YEAR	NATIVES	RUSSIANS AND OTHERS	TOTAL
1622	173,000	23,000	196,000
1737	230,000	297,810	527,810
1796	363,000	575,800	938,800
1815	434,000	1,100,500	1,534,500
1858	648,000	2,288,000	2,936,000
1897	870,536	4,889,633	5,760,169
1911	972,866	8,393,469	9,366,335
1926	...	..	13,247,200
1933	.	.	14,394,500
1939	...	...	16,576,400

In 1938, and especially in 1939, the migration of peasants was increased. Special regulations were passed giving privileges, exemptions and grants to settlers moving to Siberia and especially to the Far East. This migration helped to relieve the population pressure in rural districts of European Russia and increased the productivity and military strength of Asiatic Russia, especially when directed to the frontier districts.

The preliminary census figures of 1939 already reveal an amazing growth in Siberia and a change in the distribution of population due to the eastward movement of Soviet economy. The highest rates of population increase since 1926 are found on both sides of the Urals in Central Asia and in the Far East, in such regions (*oblasti*) as Sverdlov (53%), Novosibirsk (53%), Irkutsk (49%), Chita (73%), Buriat-Mongolia (39%), Khabarovsk (136%), and Primorye (42%) while the average increase for the whole Union is 15.9%. In 1939 the Urals, Siberia and

¹¹ Hopper, Bruce, *op. cit.*, p. 108.

¹² *Statisticheskaya Rossiya*, Vol. 1, 1914. Figure for 1933 includes: Omsk District, West Siberian Region, Krasnoyarsk Region, East Siberian Region, Far Eastern Region and Yakut A.S.S.R., according to Hopper, Bruce, "Population Factors in Soviet Siberia," *Limits of Land Settlement*, p. 105. Figure for 1939 includes the following regions: Altai, Buriat-Mongolia, Irkutsk, Krasnoyarsk, Novosibirsk, Omsk, Primorye, Khabarovsk, Chita and Yakutia, according to *Pravda*, June 2, 1939.

the Far East together had 5.9 million people (or 33%) more than in 1926, and of these 3 million migrated to these regions since 1926.

Emigration and Immigration: There was considerable emigration from Russia before the World War. During 1900-1909 there were 1,410,000 emigrants to the United States alone. In the same years a growing number of seasonal agricultural laborers went to Germany: 71,000 in 1898 and 850,000 in 1913. Others found permanent work in German industrial areas. After the World War migration never attained the proportions it had known in pre-War years and since 1930 emigration and immigration have practically come to a standstill. Foreign immigration into Siberia, especially the Far Eastern Region, has been confined to Chinese, Koreans and Japanese. The Chinese have come in as workers, craftsmen and traders and the Japanese as merchants, while the Koreans have mostly settled on the land and specialized in the cultivation of rice in the Maritime Province of the Far Eastern Region.

2. MANCHURIA

Size and Composition of Population: According to the Manchurian census made by the Department of People's Welfare,¹ Manchuria had a total population of 39,454,026 in 1939; to this may be added 1,311,465 for the Kwantung Leased Territory. Table 16 shows the population by provinces, according to the 1937 estimates. Full details of the 1939 census are not available; Fengtien accounted for 9,795,138, or 24.8% of the population, while Kirin and Chinchow accounted for 13.6% and 10.8% respectively.

As may be seen from Table 16, the population of Manchuria is very unevenly distributed. The highest densities are found in the southern and middle provinces while such provinces as Heiho, Sankiang and Hsingan are only thinly settled. This reflects climatic and topographic conditions. Table 17 illustrates the racial composition of the Manchurian population.

The population of Manchuria is overwhelmingly Chinese. There are no exact data on the number of Mongols in Manchuria, the estimates varying from 300,000 to 2,000,000. Inasmuch as Mongols who speak the Mongol language live almost exclusively in Hsingan province, where Chinese form not less than half of the total population, the number of Mongols cannot be greater than 600,000. Three-fifths of all Koreans in Manchuria live in the province of Chientao, which borders on Korea. In this province they represent the majority, 73.5% of the total. Comparatively large numbers are also found in Antung and Pinkiang. Japanese are present in every province but are concentrated in the towns. Of the total Japanese population in Manchuria in 1937, 22% lived in the province of Kirin, 8% in Pinkiang and 43% in Fengtien. Of the

¹ *The Japan Weekly Chronicle*, September 12, 1940, p. 316. All Manchurian population figures reported by the police authorities and published since the establishment of Manchoukuo suffer, as do the earlier estimates made by the South Manchurian Railway, from the lack of continuous data on vital statistics. Calculations of the natural annual increase of the Manchurian population since 1931 have been attempted by eliminating the known migration movement; the figures resulting from these calculations show an excessively high natural increase for some years which could not possibly have been achieved while, in other years, the natural increase would seem to be so low as to be incredible. Accordingly, these data should be used with a great deal of caution and they are stated here with full awareness of their unreliability.

TABLE 16. MANCHURIA: ESTIMATED POPULATION
December 31, 1937²

PROVINCES	AREA		POPULATION		DENSITY
	Sq. km.	As % of total	In thous	As % of total	Per sq. km.
Kirin (incl. Hsinking)	90,101	6.9	5,558	15.0	62
Lungkiang	125,536	9.6	2,509	7.0	20
Heiho	109,813	8.4	68	0.2	0.6
Sankiang	107,545	8.3	1,225	3.3	11
Pinkiang (incl. Harbin)	127,111	9.8	4,545	12.3	36
Chientao	29,395	2.3	645	1.7	22
Antung	36,603	2.8	2,226	6.0	61
Fengtien	75,549	5.8	9,392	25.4	124
Chinchow	29,462	2.3	4,191	11.3	142
Jehol	96,585	7.4	3,636	9.8	38
Mutankiang	17,245	1.3	637	1.7	37
Tunghua	31,620	2.4	797	2.2	26
West Hsingan	80,411	6.2	515	1.4	6
South Hsingan	79,022	6.1	824	2.2	10
East Hsingan	106,751	8.2	94	0.3	0.9
North Hsingan	160,396	12.3	88	0.2	0.5
Total	1,303,143	100.0	36,950	100.0	28
Kwantung	3,462	...	1,190	...	344

TABLE 17. MANCHURIA: ESTIMATED COMPOSITION OF
THE POPULATION AT THE END OF 1937³
(In thousands)

PROVINCES	TOTAL	CHINESE & MONGOLS	JAPANESE	KOREANS	OTHERS
Kirin	5,558	5,383	91	83	1.0
Lungkiang	2,509	2,488	14	6.1	0.9
Heiho	68	63	2.5	0.9	0.9
Sankiang	1,225	1,192	9.3	22.5	0.2
Mutankiang	637	545	22	66	3.8
Pinkiang	4,545	4,438	33	36	37.8
Chientao	645	158	13	474	0.1
Tunghua	797	718	2.8	76	0.0
Antung	2,226	2,162	19	44	0.1
Fengtien	9,392	9,110	180	100	1.4
Chinchow	4,191	4,157	17	17	0.1
Jehol	3,636	3,628	6.4	0.9	0.1
West Hsingan	515	514	0.6	0.8	0.0
South Hsingan	824	819	1.2	3.9	0.0
East Hsingan	94	90	1.6	0.3	2.1
North Hsingan	88	66	4.2	0.2	17.7
Total	36,950 100%	35,534 96.2%	418.3 1.1%	931.3 2.5%	66.3 0.2%
Kwantung	1,190 100%	1,010 84.9%	174.6 14.7%	3.9 0.3%	1.6 0.1%
Grand Total	38,140 100%	36,544 95.8%	592.9 1.5%	935.2 2.5%	67.9 0.2%

² *Japan-Manchoukuo Year Book*, 1939. The population figures for Heiho and North Hsingan have been taken from the 1940 *Year Book* as those given in the 1939 edition referred to 1936, not 1937. The total is also quoted from the 1940 edition.

³ *Japan-Manchoukuo Year Book*, 1940, p. 604.

category "Others" in Table 17, Russians, both Soviet citizens and White Russians, form the great majority. They are concentrated in Harbin, although there are also many living along the former Chinese Eastern Railway, especially along its western section.

The 1939 census reported 37,518,833 Manchurians, 95.1% of the total population, 1,152,127 Koreans, or 2.9%, and 642,356 Japanese, or 1.6%, in Manchuria. Of the Kwantung population, Manchurians numbered 1,108,817, or 84.5%, Japanese 195,765, or 14.9%, Koreans 5,087, or 0.4%, and foreigners 1,796, or 0.1%.

The Problem of Immigration: As we have seen, the great majority of the population of Manchuria is Chinese, stemming from North China, especially from the provinces of Shantung and Hopei. The first Chinese migration into Manchuria began toward the end of the 18th century, but it was not until 1878 that the official barrier to migration into Manchuria was lifted. From then on a steady stream of Chinese peasants has flowed into the Three Eastern Provinces.⁴

The decade prior to the Mukden Incident of 1931 saw an enormous increase in the size of the migration stream. Two forces were active—on the one hand, the force of attraction of employment and settlement possibilities in Manchuria, and, on the other, the driving force resulting from overpopulation and such adverse economic and political conditions as famine, civil war and misrule in North China, especially in Shantung and Hopei. A good many of the migrants came only for one season, arriving early in spring and returning in the autumn. Many, however, stayed and settled on the land.

Table 18 shows increasing movements between Manchuria and North China up to 1930. During the years 1927 to 1929 the number of immigrants and of those who remained in Manchuria was especially large, due to serious conditions in Shantung. The situation changed considerably, however, after the Japanese established their control. By 1931 the two streams of migration had already nearly balanced each other. In 1932 unsettled conditions brought about a large exodus of Chinese; but in 1933 and 1934 many Chinese laborers were required for construction work undertaken by Japanese.

Since 1935 Chinese migration has been controlled, the purpose of the control being originally that only Chinese coolies, recruited principally for seasonal labor, be admitted. Unofficial information indicates, however, that control was not fully effective and that net immigration exceeded the figures shown in Table 18 for 1935 to 1937. Since 1938 the boom conditions prevailing in Manchuria under the Five-Year Plan of Industrial Development have attracted Chinese labor, encouraged to leave by the turbulent conditions in North China.

At the beginning of each season the Labor Control Commission, established by the Manchoukuo Government, determines the demands for labor and decides on the quota of coolies to be brought in. The recruiting of the coolies is handled by the Tatung Kungssu, which since 1935 has been a Manchoukuo corporation with headquarters at Hsinking

⁴ Young, C. Walter, "Chinese Immigration and Colonization in Manchuria," *Pioneer Settlement*, New York, 1932, p. 335.

and offices throughout Manchoukuo and North China. The quota for Chinese coolies amounted to 440,000 in 1935, 380,000 in 1936 and 1937, 400,000 in 1938, and 470,000 in 1939. This limit was later increased to 910,000 because during 1937 and 1938 there was a shortage of labor, resulting in part from the China Incident and in part from the construction activities in Manchuria of the new Five-Year Industrial Plan.⁵ Despite this increase in Chinese migration to Manchuria, Chinese settlement on the land, for permanent cultivation, seems to have been barred by the new regime, the remaining areas of cultivable but uncultivated land having been earmarked for Japanese colonization.⁶

TABLE 18. CHINESE IMMIGRATION INTO MANCHURIA⁷
(In thousands)

YEAR	ENTERED	RETURNED	PRESUMABLY REMAINED
1923	433.7	286.8	146.9
1924	492.5	232.7	259.8
1925	532.8	214.6	318.2
1926	607.4	299.4	308.0
1927	1,159.7	316.6	843.2
1928	1,074.5	381.1	693.4
1929	1,046.3	601.4	444.9
1930	748.2	488.5	259.7
1931	467.4	461.3	6.1
1932	414.0	498.8	-84.7
1933	619.0	497.2	121.7
1934	690.9	439.6	251.3
1935	519.6	495.0	24.5
1936	358.1	366.8	- 8.6
1937	319.3	259.1	60.2
1938	492.4	252.8	239.6
1939	986.0	391.0	595.0

Even prior to 1931 settling in Manchuria was not an easy matter. There was no free land left in accessible areas, so that most peasants could not hope for their own farms but had to be content with rented farms, for which they frequently had to pay 50% to 60% of the harvest. A large number of the Chinese immigrants were unable even to rent farms and had to return to China.

There is still land which could be brought under the plow. According to the latest available estimate, the total land area of Manchuria amounts to 92,500,000 hectares or about 229,463,000 acres, of which 15.1% is cultivated and 19.2% is cultivable but not yet turned to use.

⁵ *Fifth Report on Progress in Manchuria*, p. 162.

⁶ Stewart, John R., "Manchoukuo Restricts Entry of Chinese to Seasonal Laborers," *Far Eastern Survey*, Vol. VII, pp. 9-10, and "Japan's Strategic Settlements in Manchoukuo," *Far Eastern Survey*, Vol. VIII, pp. 37-43.

⁷ Data for 1923 to 1935 are quoted from South Manchuria Railway, *Fifth Report on Progress in Manchuria*, p. 171; data for 1936, 1937 and 1938 from *Sixth Report*, . . . , p. 137; and for 1939 from *Far Eastern Survey*, 940, p. 214.

Less than half, therefore, of the land supposed to be arable has been cultivated.⁸

Since the end of the Russo-Japanese War the Japanese have looked toward Manchuria as the most promising field for the agricultural settlement of their land-hungry peasantry, but for twenty-five years they have met with only disappointing experiences. At the end of 1930 there were only 743 Japanese farming families (3,120 persons) in Manchuria. Between 1905 and 1931 a number of ambitious schemes were proposed, and since the creation of Manchoukuo the number of schemes to foster Japanese land settlement has increased. In 1932 the Department of Colonial Affairs in connection with the Department of the Army worked out a plan for settling 100,000 subsidized farming families within the following ten years. Japanese authorities are now planning to settle one million farming households (5 million persons, estimating 5 persons per family) in Manchuria in the course of 20 years. Should the Japanese be able to realize this plan, they would strengthen their hold on the country, especially if all men settlers were young army reservists and were to begin farming in the sparsely populated northern frontier regions. The establishment of military colonies of farmers was the procedure used by the Japanese in the colonization of Hokkaido and by the Russians in parts of Siberia.⁹ During the period 1932-38 about 10,000 families and 20,000 boy settlers (unmarried men between 16 and 20) were placed on the land in Manchuria.¹⁰

Many authors are skeptical as to the future of large-scale Japanese migration to northern Manchuria and they point to the difficulty of competing with the Chinese farmers and their low standard of living, to the uncongenial climate, to the lack of markets for Manchurian products and to the alleged unwillingness of the people to leave Japan. Japanese settlement is already lagging behind plan (in part because of the special conditions created in Japan by the large-scale military operations on the continent) despite great inducements such as low interest rates and long amortization periods for the payment of land prices, cash subsidies paid by the governments of Japan and Manchoukuo, and exemption from the tax burdens which Chinese peasants have to shoulder in Manchoukuo.

A considerable migration of Korean farmers into Manchuria has also taken place. Their migration was almost unassisted. Moreover, since 1937 it has been subject to control and as the Japanese labor shortage has attracted Koreans to Japan, Korean migration has, of late, become insignificant. The standards set for annual Korean migration to Manchuria, under the control scheme, are much lower, 10,000 families per annum, than actual migration between 1933 and 1936. In 1935 the Toa Kangyo Company (Oriental Development Company) settled 2,500 Korean families for 300,000 yen—an outlay of 120 yen per family. The Japanese, on the other hand, allow 2,000 to 3,000 yen per family in their assisted-settlement plans. The Sen Man Taku Shoku Limited

⁸ *Sixth Report on Progress in Manchuria*, p. 138.

⁹ Pelzer, Karl J., "Japanese Migration and Colonization," *Limits of Land Settlement*, Bowman, Isaiah, editor, New York, 1937, pp. 166-170.

¹⁰ Stewart, John R., *Far Eastern Survey*, Vol. VIII, p. 42.

Company, with a subscribed capital of 20 million yen, plans to settle 800,000 Koreans in 15 years; results in 1938 and 1939, however, lagged behind the annual average of this plan. (If this company used the Japanese estimates of 2,500 yen per family, its entire capital would be used up in one year and only 12,000 families would be settled.) It is interesting to note that Korean settlement is ahead of its plan in contrast to Japanese settlement.

3. JAPAN PROPER

Population Growth: Japan's rapid population growth within the past seventy years repeats the earlier, nineteenth century experience of the Western peoples. It is a phenomenon associated with the early stages of industrialization. The growth of the Japanese population since 1909-13 is shown in Table 19.

TABLE 19. JAPAN: GROWTH OF THE POPULATION¹
(In thousands)

PERIOD	POPULATION	DEATHS	BIRTHS	EXCESS OF BIRTHS
	(Oct. 1)			
1909-13 average (a)	50,223	1,061	1,746	685
1925-29 "	61,542	1,216	2,093	876
1930-34 "	66,300	1,203	2,107	904
1935	69,254	1,162	2,191	1,029
1936	70,258	1,230	2,102	872
1937	71,253	1,208	2,181	973
1938	72,223	1,260	1,928	668
1939	72,876	...	...	...

(a) For the period 1909-1913 the basic figure is that of 1910 (49,184,000), as estimated in *Population du Japon depuis 1872*, Tokyo, 1930.

According to Table 19, the population increased by 23 million between 1909 and 1938. Up to 1937 the total annual number of deaths increased by about 147,000 while the number of births increased by 435,000. While the trend in the Japanese birth rate was downward, the annual net increase of the population was maintained because of declining death rates. As a result of the Sino-Japanese hostilities, however, the birth rate declined in 1938. Compared with the previous year, the decline in births amounted to 3.2% in the first quarter of 1938, 9.7% in the second, 15.9% in the third, and 19.9% in the fourth.² For 1939 and 1940 the total number of births can scarcely be expected to exceed 1,750,000 annually. On the other hand, the 1938 mortality statistics do not include military casualties suffered in China. With this omission, a lower total of annual deaths should have resulted;

¹ *Dainippon Teikoku Tokai Nenkan*. The figures for 1938 and 1939, in the first column of this table, do not seem to take full account of war casualties or of Japanese migration to the continent of Asia. Moreover, the growth indicated for the period October 1, 1938, to October 1, 1939, reflects the population increase of the calendar year 1938 rather than that of 1939. In the latter year, according to the incomplete data available, the natural growth of the Japanese population seems to have been below rather than above 400,000.

² *Oriental Economist*, June 1939, p. 387. Figure for last quarter computed by ed.

moreover, the decrease in births should have been followed by lower totals of infant mortality, reducing the total annual deaths by an additional figure. Instead, the rise of mortality in 1938, as shown in Tables 19 and 20, seems to reflect the decline of Japan's national health following in the wake of Sino-Japanese hostilities. For 1939 and 1940, with no final data available, it would seem possible to assume that the annual net population growth, taking into account fatalities in China and elsewhere, amounted to no more than 400,000, with a death rate of at least 18% and a birth rate of at best 24%, resulting in an annual rate of increase of no more than 6%. This abrupt decline followed upon a period of steady annual growth at a rate of about 13.5%. The trend of birth and death rates in Japan becomes much clearer if relative rather than annual figures are used.

TABLE 20. JAPAN: GROWTH OF THE POPULATION
(Relative Figures)

PERIOD	INDEX OF GROWTH	DEATH RATE	BIRTH RATE	RATE OF INCREASE
1909-13 average	100	21.1	34.7	13.6
1925-29 "	122.5	19.3	33.5	14.2
1930-34 "	132.0	17.9	31.6	13.7
1935	137.9	16.8	31.6	14.8
1936	139.9	17.5	29.9	12.4
1937	141.9	17.0	30.7	13.7
1938	143.8	17.5	26.7	9.2
1939	145.1 (a)	..	...	...

(a) This would be 148.1 if the 1909 figure were taken as a base instead of the 1909-13 average.

The rapid increase of 41.9% (or 44.9%, taking 1909 as the base) between the population in 1909 and in 1937 was due to a high birth rate, the slight decrease of which was more than compensated by a marked fall in the death rate, so that the rate of increase in 1935 was even higher than the average for 1909-1913. Since this date, however, the rate of increase has dropped considerably. The decrease in the birth rate between 1909 and 1936 is quite noticeable; and while in 1937 the birth rate showed a slight increase again, in 1938 it dropped from 30.7 to 26.7.

For the future, a further decline is to be expected. The tendency toward a higher female marriage age and the inclination of economically independent women to escape the burdens of parenthood, already in existence before the outbreak of Sino-Japanese hostilities, have undoubtedly been strengthened by the wartime economic and social changes and are likely to survive even after peace has returned to the Far East.

According to estimates made before the Lukouchiao Incident, the population of Japan was expected to grow to about 80 million by 1950. With the interruption of the steady population growth which has now taken place and which is likely to be of a lasting nature, no revision of these estimates has been attempted. For the probable growth after 1950 we find different estimates. Dr. Uyeda, who has taken into con-

sideration changes of age composition, has come to the conclusion that the population can never reach the 100-million mark.³ In contrast to Uyeda, the Institute for Research of Population Problems in Japan, neglecting these changes, has estimated a population of 100 million toward the end of the seventh decade. According to Mr. Inouye, the director of the Institute, the result of Dr. Uyeda's estimates is an under-estimate while their own is an over-estimate. "The comparatively correct future population of Japan, roughly speaking, will lie somewhere between those two estimates. According to the estimates of the Institute and Dr. Uyeda, the population of Japan in the year 1970 are [*sic*] 105,000,000 and 87,700,000 respectively; that is, after thirty years, our population will reach more than ninety millions or thereabouts, even though not exceeds [*sic*] a hundred million."⁴ Uyeda's assumption of a stationary population is based on the fact that the fecundity of Japanese women is diminishing, although the diminishing rate of infant mortality will counteract this to a certain extent.⁵

All these discussions appear now, in view of the recent changes, somewhat meaningless, as obviously the future size of the Japanese population will depend upon the standards of living and mating as they will be established after the restoration of peaceful conditions.

Population Problem: It is generally accepted that, under pre-1937 conditions, agriculture could not take care of the increasing number of Japanese people of "productive" age because "the capacity of rural Japan to maintain numbers of people is, unquestionably, very limited."⁶ Actually, Japan's population had begun to concentrate in the cities and in urban occupations to such an extent, when the above lines were written, that the population living in cities with more than 100,000 inhabitants apiece increased from 17.8% to 25.3%, of the total between 1930 and 1935. Within these five years Japan's total population increased by only 4.8 million while that of these larger cities increased by more than 6 million people.⁷ During the same period the Japanese population living in communities with less than 10,000 residents declined from 59.2% to 54.2% of the total, or by more than 1.6 million persons. Thus in 1935 rural Japan maintained about 4% fewer people than in 1930. Japanese industry absorbed during this quinquennium not only the growing number of young people who were forced to leave their rural homes each year but an additional total of laborers probably in excess of the annual labor surplus accruing in the Japanese villages.

This process continued in subsequent years. The number of Japanese cities with a population of more than 100,000 each was estimated to have increased from 32 in 1930 and 34 in 1935 to 42 in 1938; these 42 cities had more than 20 million inhabitants, or 28% of the total population, as against 11.5 million in 1930 and 17.5 million in 1935. At the

³ Uyeda, Teijiro, *Future of the Japanese Population*, Tokyo, 1933.

⁴ *Population of Japan*, report submitted to the International Population Conference by Masaji Inouye, Managing Director, Institute for the Research of Population Problems in Japan, Tokyo, 1937, p. 11.

⁵ For a discussion of the various estimates see Ishii, Kyoichi, *Population Pressure and Economic Life in Japan*, London, 1937, pp. 126-139.

⁶ *Ibid.*, p. 160.

⁷ *The Japan Year Book*, 1939-40, p. 52.

same time the number of agricultural households has declined by about 100,000 since the outbreak of Sino-Japanese hostilities.

It may well be said, therefore, that the capacity of the Japanese people to maintain their growing industries is, unquestionably, very limited, so much so that the rate of industrial expansion since the early thirties has only been maintained at the expense of depleting the rural labor supply.

Migration: Many Japanese hold that international redistribution of the population and emigration offer two methods of alleviating the population problem, but, as suggested by Dr. Ishii, the following three factors explain why both have been so limited in their application. (1) The prolonged policy of isolation under the Tokugawa regime suppressed the earlier tradition and ambition for overseas activities and thereby devitalized Japanese ventures in colonization and emigration. (2) When, after the Russo-Japanese War, Japan entered the field of international activity, she found that all undeveloped territories were already occupied by the Caucasian peoples. In particular, the Anglo-Saxon peoples were in possession of those territories which, for many reasons, seemed most desirable for Japanese colonization. Racial prejudice, accompanied, of course, by economic ambitions, predestined the exclusion of Japanese from these regions. (3) Most of the colonies and dependencies secured by Japan in recent decades were already densely populated, long before their inclusion in the Japanese Empire, by peoples of relatively inferior standards of living.⁸ The *Economic Handbook of the Pacific Area* gave a short survey of the history of Japanese migration.⁹ A distinction should be made between the migration of Japanese to colonies and dependencies and migration to foreign countries. Table 21 shows the increase in the number of Japanese residing in Manchuria and in colonies and dependencies, between 1927 and 1936.

TABLE 21. JAPANESE POPULATION IN MANCHURIA,
COLONIES AND DEPENDENCIES¹⁰
(In thousands)

POLITICAL UNIT	1927	1936	DIFFERENCE
Korea	455	609	154
Formosa	203	282	79
Kwantung and S.M.R. Zone	185	370	185
South Sea Islands	10	56	46
Manchuria	about 13	about 145 (1935)	132
Karafuto	215	313	98
Total	1,081	1,775	694

This increase of 64.2% in the decade 1927-1936 results of course not only from migration but also from the natural increase of the Japa-

⁸ Ishii, Ryoichi, *op. cit.*, p. 209.

⁹ See also: Freeman, T. W., "Recent and Contemporary Japanese Migration," *Scottish Geographical Magazine*, Vol. 53, Sept. 1937, pp. 323-345, and Pelzer, Karl J., "Japanese Migration and Colonization," Bowman, Isaiah, editor, *Limits of Land Settlement*, New York, 1937, pp. 155-194.

¹⁰ Compiled from *Dainippon Teikoku Tokai Nenkan* and *Tokumu Tokai*. But the *Japan-Manchoukwo Year Book* 1940, p. 604, gives 418,300 Japanese as residing in Manchuria at the end of 1937.

nese. In Korea, for example, natural increase accounted for 41,000, while the increase caused by migration was 113,000 or only 11,300 per year.

Table 22 illustrates very clearly the role played by Brazil as practically the only foreign country to which Japanese could migrate during the past 25 years.

TABLE 22. JAPANESE RESIDING IN FOREIGN COUNTRIES¹¹

COUNTRY	1913	1925	1930	1935	1937
China	107,704	47,612	54,391	58,325	59,345
Hongkong	1,214	1,561	2,219	2,133	544
U.S.S.R.	4,629	921	2,877	2,673	2,822
Thailand	194	239	336	441	516
French Indo-China	...	...	346	225	241
Straits Settlements	5,166	...	7,425	7,847	7,951
Hawaii	88,526	125,764	...	110,040	151,850
Philippines, incl. Guam	4,894	...	19,572	21,524	24,048
Netherlands India	2,304	...	6,325	6,877	6,485
Australia & New Zealand	6,661	2,322	4,302	3,418	3,026
Canada	12,253	19,679	20,989	18,804	21,129
U. S. A.	78,510	133,080	100,128	98,357	114,642
Mexico	2,737	3,632	5,832	5,245	4,631
Peru	4,858	10,969	20,835	20,827	22,150
Chile	306	556	710	721	682
Brazil	11,893	49,400	116,502	173,420	197,733

There are three foreign areas with over 100,000 Japanese residents each: Hawaii, the United States and Brazil. Japanese statistics, however, also include here those Japanese who have foreign citizenship because of birth in a foreign country or naturalization.

The majority of Japanese residents abroad are engaged in agriculture and business on their own account; only a small number are laborers.

While the Japanese Government has been spending millions of yen to encourage emigration, there has been considerable immigration since the World War, especially of Koreans. The number of Koreans living in Japan increased tenfold from 40,700 in 1925 to 419,000 in 1930; in 1939 it reached 800,000 and the Governor-General of Korea stated publicly it might soon reach one million. About 90% of the Koreans in Japan were formerly either tenant peasants or unskilled casual laborers and most of them enjoy a higher standard of living in Japan than they would in their homeland. The total number of foreign residents in Japan amounted to 38,475 in 1935, of whom a great majority (26,200) were Chinese, followed by Americans from the United States (2,084) and Englishmen (2,075).

¹¹ *Japan Year Book* and *Japan-Manchoukuo Year Book*

4. CHINA

Data on the population of China are insufficient for treatment comparable to that given other countries in the general tables in the first part of this chapter.

Size of the Population: Since the publication of the *Economic Handbook of the Pacific Area* no population census has been taken in China, but some new estimates have been made which, however, do not do away with the existing controversy about the size of the population. Tables 23 and 24 list various estimates of China's population.

TABLE 23. CHINA: ESTIMATES OF POPULATION¹*Estimate Made By*

Imperial Government, 1910	...	...	...	...	330,000,000
Maritime Customs, 1931	...	...	...	...	438,933,000
Imperial Government, 1900	...	...	...	...	440,000,000
Warren H. Chen	...	...	...	...	445,000,000
Ministry of the Interior, Provincial Governments, and					
Geographical Society of Wuchang	...	...	...	...	452,791,000
Directorate of Statistics, Nanking, 1931	...	...	...	...	452,791,000
Chang-heng Chen	...	...	...	...	457,000,000
M. T. Z. Tyau	...	...	...	...	463,000,000
D. K. Lieu	...	...	...	...	470-480,000,000
Ministry of the Interior, 1931	...	...	...	...	474,480,000
Post Office, 1926	...	...	...	...	485,509,000

TABLE 24. CHINA: ESTIMATES OF POPULATION
BY WESTERN WRITERS²

DATE OF ESTIMATE	WRITER	POPULATION (In millions)
1901	Supan	320
1904	Rockhill	275
1912	"	330
1922	China Continuation Committee	350-400
1925	Roseby	400
1928	Willcox	295
1930	"	342
1934	Latourette	400
1935	Fitzgerald	350
1936	Carr-Saunders ✓	450
1937	Willcox	350
1937	Notestein, first estimate	400
1937	" second estimate	600

In 1931 the Ministry of the Interior estimated the total population at 474,480,000; in 1934—the latest estimate published—it reported 463,752,000. It is impossible to say what caused this decrease in the estimate. The last figure includes the population of Heilungkiang, Kirin, Lianin and Jehol; after excluding these the population would be 432,238,000. Finally, if Sinkiang, Tibet, Tsinghai and Sikang are omitted, the remaining 21 provinces have a population of 421,994,000 with an average density of population of 93 persons per square kilometer. Taking only the 17 inner provinces (omitting Kansu, Ningsia, Suiyuan and Chahar), the population density is about 125 per square kilometer.

¹ *Economic Handbook of the Pacific Area*, New York, 1934, p. 22.

² Willcox, W. F., "The Population of China and its Modern Increase," *Revue de l'Institut International de Statistique*, 5e Année, 1937, p. 12, with the exception of the estimates by Notestein, quoted from Buck, J. L., *Land Utilization in China*, Chicago, 1937, p. 363.

In 1934 the Ministry of Communications estimated a total of 435,870,000. Without Manchuria the total would be 411,828,000 or 20 million below the 432 million estimate of the Ministry of the Interior.³

F. A. Notestein and Chi-ming Chiao came to the conclusion that one approach, based on 101 surveys including 202,617 persons, led to an estimate of 300 million and another approach, using density data, led to an estimate of 489 million for the farm population of all the eight areas studied. The total population of the eight areas included in the survey, excluding the three northeastern and parts of some western provinces, would amount to about 400 million, if the first estimate were accepted. If the second estimate were used the total population would be over 600 million. The authors add: "It is the present opinion of the writers that the latter figure is too high and the former is quite possibly too low."⁴

Age Distribution: Chinese age distribution as recorded in the 101 surveys made under the direction of Professor J. L. Buck is shown in Table 25.

TABLE 25. CHINA: AGE DISTRIBUTION OF THE POPULATION AS COMPARED WITH THAT OF VARIOUS OTHER COUNTRIES⁵
(In percentages)

AGE	CHINA (1929-1931)			INDIA 1931	ENGLAND & WALES 1927	UNITED STATES	
	Total Sample	North	South			Total 1930	Rural 1930
Total	100.0	100.0	100.0	100.0	100.0	100.0	99.9
Under 10	25.0	24.1	25.7	28.5	16.9	19.6	22.7
10-19	19.3	19.1	19.4	20.7	17.7	19.2	21.5
20-29	17.0	16.7	17.3	18.1	16.7	16.9	15.1
30-39	13.8	13.4	14.2	13.9	14.3	14.9	12.6
40-49	11.4	12.3	10.6	9.3	13.2	12.3	10.9
50 and over	13.5	14.4	12.8	9.5	21.2	17.1	17.1

This table shows that the population of China is young in comparison with Western nations. There is a difference between North and South China, the population of the latter being definitely younger, reflecting the higher birth and death rates in the South. Extensive migration, probably to Manchuria, is possibly the explanation for the irregularity in the population curve of North China.

Growth of the Population: There is no registration of births and deaths in China, so that information regarding vital statistics and population growth can be estimates only. F. A. Notestein and Chi-ming Chiao report a crude birth rate of 38.3 per 1,000 population for the whole area under investigation, the rate being 37.4 for North China and 39.0 for South China. But the authors themselves state that "this is probably a conservative statement of the actual rate which may well have been over 40."⁶ The high birth rate is probably not due so much

³ *Chungkuo Chungchi Nienchuan*

⁴ Buck, J. L., *Land Utilization in China*, p. 363.

⁵ *Ibid.*, p. 377.

⁶ *Ibid.*, p. 382.

to high fertility as to the high percentage of married women among the women of child-bearing age, 85% as compared with 67% in Japan.⁷ Apparently the fertility of Chinese women is lower than that of Japanese women, but "the universality of marriage in China more than counteracts the effect of the lower fertility of married women, yielding a higher crude birth rate in China than in Japan."⁸

The death rate is 27.1, again being higher in the South than in the North (30.0 as against 24.1). This rate is very high as compared with the United States, where it was 11.3 in 1930; England and Wales, 12.3 in 1931; and Japan, 18.2 in 1930. However, "the records of deaths, as well as those of births, undoubtedly were incomplete. The actual death rate for the entire sample may well have been over 30 per 1,000 inhabitants, instead of 27.1 as the records indicate."⁹ Birth and death rates show that the rate of natural increase is not less than 1% per year and it may be considerably greater. It should be kept in mind, however, that the years surveyed in the investigated localities, 1929-31, were relatively good years, being without wars or famines.

TABLE 26. CHINA: CRUDE BIRTH AND DEATH RATES¹⁰

ITEM	CHINA	NORTH CHINA	SOUTH CHINA
Birth	38.3	37.4	39.0
Death	27.1	24.1	30.0
Increase	11.2	13.3	9.0

Rural and Urban Population: According to official figures published in 1932, 75% of all households were rural. The sample data of the *Land Utilization* studies "give a distribution of 79 per cent in farm villages and hamlets, 11 per cent in market towns where part of the population is engaged in agriculture, and 10 per cent in cities."¹¹

Migration: In the past, two great streams of migrants have gone out from China proper: one from the overpopulated northern provinces, especially Shantung and Hopei, to Manchuria; the other from the southern provinces, Kwangtung and Fukien, overseas, above all to Nan Yang.¹² The first of these has been treated in the paragraphs on Manchuria.

The homes of almost all overseas Chinese were in the provinces of Fukien and Kwangtung. "While at least one-half and possibly a majority of the Chinese emigrants in southeastern Asia are from Fukien, those in North, Central and South America are almost exclusively from Kwangtung."¹³ Only estimates are available as to the number of Chinese living in Southeastern Asia, the English-speaking Pacific countries and Latin America, and they vary between 10½ and 11½ million, depending upon the estimate of the number of Chinese in Thailand. Since the English-speaking countries of the Pacific closed their doors to

⁷ *Ibid.*, p. 384.

⁸ *Ibid.*, p. 384.

⁹ *Ibid.*, p. 387.

¹⁰ *Ibid.*, pp. 361, 383, 387.

¹¹ *Ibid.*, p. 363.

¹² J. J. Reeman, T. W., "Recent and Contemporary Chinese Migration," *Comptes Rendus du Congrès International de Géographie*, Amsterdam, 1938, Tome II, Section IIIa, pp. 11-22.

¹³ Chen Han-seng, "The Present Prospect of Chinese Emigration," *Limits of Land Settlement*, p. 138.

Chinese immigration, only Nan Yang, that is the lands and countries south and east of China, around the China Sea, have remained open to Chinese migrants. Until the beginning of the world depression the outward movement of Chinese was larger than the inward movement. Since 1930 the number of Chinese abroad, especially in Nan Yang, seems to have decreased. No exact proof, however, can be offered until the next census results become known.¹⁴ The number of Chinese has especially decreased in Thailand (Siam). In 1930 there were two and a half million Chinese in Thailand, according to Chinese estimates, while the Siamese, who consider Chinese born in Thailand as of their own nationality, admitted to only about one-fifth of this number. In recent years more Chinese have left Thailand than entered. The years 1931 to 1933 saw an enormous remigration of Chinese coolies from Malaya and only since 1934 has there been again a net immigration into Malaya. Immigration of Chinese workers into Malaya as well as into the Netherlands Indies is restricted. Further data will be found under the various countries in this chapter.

Emigrants' Remittances: An important factor in the Chinese economy, especially in the economy of the home communities of the migrants, are the remittances sent home annually to China.¹⁵ Of course the amount of the remittances has been seriously affected by the depression and the return movement of Chinese workers. On the other hand, overseas Chinese communities have rallied to the support of Chinese defense against the Japanese invasion with large financial aid. One estimate¹⁶ gives the total of contributions to the Chinese government's defense budget from overseas Chinese from July 1937 to December 1939 as Ch\$213,508,349. For the period from February to December 1939, a breakdown by regions indicates that of Ch\$55,842,325 remitted during that period (including Ch\$3,740,527 from the International Red Cross) the larger portion, 40½ million, came from the Asia zone. The next in importance was the American zone with slightly under 9 million. These are figures for contributions to the war rather than emigrants' remittances to the families at home, figures for the latter category not being available for recent years. In his study, *Foreign Investments in China*, however, Professor Remer accepts the figure Ch\$200,000,000 as the average annual remittance to China from overseas Chinese for the years 1914 to 1930, a figure which was doubtless very greatly reduced in the depression years.

¹⁴ *Ibid.*

¹⁵ Ta Chen, *Emigrant Communities in South China*, New York, 1940.

¹⁶ *Finance and Commerce*, Shanghai, March 20, 1940, Vol. 35, No. 12.

5. THE PHILIPPINES

Growth and Distribution of the Population: The first census of the Philippine population since 1918 was taken on January 1, 1939. A preliminary report of the Census Commission¹ gives 16,000,303 as the population on that date, in comparison with 10,314,000 in 1918. Table 27 gives population estimates at five-year intervals since 1905.

¹ Commonwealth of the Philippines, Commission of the Census, *Special Bulletin*, No. 1, Manila, 1940.

In 1939 the entire foreign population of 161,500 was slightly over 1% of the total population. It included 117,431 Chinese, 25,252 Japanese, 8,639 Americans, 4,567 Spanish, 1,045 Germans (of whom doubtless some hundreds are Jewish refugees) and 4,566 of other nationalities. The majority of the Filipinos are Malays, among whom may be distinguished two groups: the less numerous Indonesians, mostly non-Christian, who live in the mountainous interior; and the so-called lowland Malays, most of whom were Christianized by the Spaniards. Older than the Indonesians and the Malays are the Negritos or pygmy tribes who are few in number and inhabit remote mountain forests.²

TABLE 27. THE PHILIPPINES: POPULATION ESTIMATES AT FIVE-YEAR INTERVALS; INCREASES AND RATES OF ANNUAL INCREASE, 1905 TO 1937^a

YEAR	POPULATION	INCREASE FOR FIVE-YEAR PERIOD	RATE OF ANNUAL INCREASE PER 1,000 MEAN POPULATION OVER FIVE-YEAR PERIOD
1905	8,030,208	...	...
1910	8,876,170	845,962	20.0
1915	9,722,135	845,965	18.2
1920	10,566,889	844,754	16.6
1925	11,408,819	841,930	15.3
1930	12,250,752	841,933	14.2
1935	13,096,400	845,648	13.4
1937	13,439,000	342,600 (2 yrs.)	12.9 (2 yrs.)

The Philippine population problem is one of maldistribution rather than of overpopulation. The mass of the people are concentrated in a few very densely settled areas, while large sections of the islands have only a scant population. The overpopulated areas include most of Luzon (especially the Ilocos coast), the islands of Cebu and Bohol and parts of Panay and Negros. Among the underpopulated areas the most important is Mindanao, one of the most thinly populated islands of the whole group. Other sparsely settled islands are Palawan, Mindoro, Basilan and Samar. The great problem, therefore, is to transplant a portion of the people from the overpopulated regions of Luzon and the Visayas to the undeveloped but potentially rich areas of Mindanao. In the past twenty-five years several acts have been passed designed to ease the population problem by settling land-seeking peasants on homesteads. Although some settlement work has been done in Mindanao, the homestead policy of the government so far has been a failure. Since the fall of 1938, however, the authorities have made great efforts to get a new long-range program of development started in Mindanao. Two hundred thousand pesos were released as an emergency allocation for organization work in the Mindanao Resettlement Project. A

² See Kroeber, A. L., *Peoples of the Philippines*, American Museum of Natural History, Handbook Series No. 8, New York, 1919.

^a Population figures from the *Statistical Abstract of the United States*, 1939, p. 10.

government corporation, the National Land Settlement Administration, with a capital of P20,000,000, was established.⁴ On February 23, 1939, the first group of settlers sailed from Manila to Mindanao, accompanied by Major-General Paulino Santos, the head of the N.L.S.A., and a group of government technicians. The government hopes that this first group is the vanguard of a stream of settlers who will follow in the next ten years or so.

Immigration: Immigration into the Philippine Islands involves, in the main, two groups, Chinese and Japanese. In addition, a field mission was sent to the Philippines in 1938 to study a proposed scheme under which Jewish refugees from Europe might settle in Mindanao. The complete official report of the mission has not yet been released. The Commonwealth, however, has stated its willingness to take some 10,000 refugees over a period of ten years. The new immigration act, referred to below, makes special provisions for the entrance of refugees.

Chinese form by far the largest group of alien residents in the Philippines. The Bureau of Health reported their number as 76,455 in 1935, and the 1939 census listed 117,431. Because of widespread evasion of the immigration regulations, however, many people believe that the figure is nearer to 150,000. In addition, "probably 750,000 of the most prosperous and influential Filipinos are in considerable part of Chinese blood."⁵ Up to 1931 the Chinese controlled between 70 and 80% of the retail trade; since then the Japanese have built up their own commercial outlets, but the Chinese still do probably more than half of that kind of business. In their hands are also the commercial credit facilities and, most important, the milling and distribution of rice, the staple food of the Filipinos.

Since the Philippines came under American rule the country has been protected against Chinese mass immigration through the application of the American immigration laws. At the beginning of 1939 President Quezon instructed the National Assembly to lift the immigration ban against Chinese and to place all immigrants, including Japanese, on a quota basis. "To protect the interests of our people and repair the injustice done to certain races by existing legislation," said President Quezon, "we should enact a new immigration law. Under the present law, passed by the Congress of the United States, Chinese, Indians and some other Orientals may not be admitted. Ours is an Oriental country, we are an Oriental people and belong to the same racial stock as some of those excluded by our laws. So long as other foreigners are allowed to immigrate we should admit under the same terms and conditions those coming from other Oriental countries. To avoid, however, a large influx of immigrants from any one country we should establish a quota that will be the same for all countries."⁶

The new immigration bill was passed by the Philippine Assembly in May 1940, and places all immigration on a flat quota basis, the quota

⁴ Odell, Lawrence H., "New Land Resettlement Program for Mindanao," *Far Eastern Survey*, 1939, Vol. VIII, pp. 69-70.

⁵ Hayden, Joseph R., *Memorandum on American Experience with Problems of Population in the Philippines and Puerto Rico*, United States Memorandum No. 4, International Studies Conference, Paris, 1937, pp. 15-16.

⁶ *New York Times*, January 25, 1939.

being 500 immigrants from any one country. This is a reduction from the first quota proposed, 1,000 persons, and has aroused considerable protest, especially from the Japanese.

In spite of the fact that Japanese immigration into the Philippines was not directly restricted by law, the number of Chinese migrants in the past has surpassed that of Japanese, as may be seen in Table 29. The Japanese government, however, has voluntarily limited the number of passports issued for the Philippines. The law forbidding the importation of contract labor into the United States, its territories and insular possessions prevents the coming of Japanese contract laborers to the hemp plantations of Davao. The other law which has indirectly restricted the immigration of Japanese is the Public Land Act of the Philippines which (a) restricts the sale or lease of public land to corporations and associations at least 61% of whose capital stock belongs to citizens of the Commonwealth or of the United States and (b) restricts the size of the land holdings to a maximum of 1,024 hectares.

Table 28 reveals the occupations of the Japanese colonists in Davao for the year 1934.

TABLE 28. THE PHILIPPINES: OCCUPATIONAL DISTRIBUTION OF THE JAPANESE IN DAVAO—1934⁷

Farmers and tenants	...	...	...	7,464
Agricultural laborers	...	...	...	2,600
Commercial employees of the plantations	...	...	...	826
Commerce	...	...	...	328
Fisheries	...	...	...	274
Lumber industry	...	...	...	244
Construction	...	...	...	224
Factory laborers	...	...	...	166
Drivers	...	...	...	126
Barbers	...	...	...	70
Servants	...	...	...	57
Photographers	...	...	...	47
Other occupations	...	...	...	639
				13,065

The 1903 census reported 921 Japanese in the Islands and the census of 1918, 7,808; in 1935 their number was estimated at 20,641, and in 1936 at 21,951, of whom about 14,000 were living in the province of Davao on the island of Mindanao. In the 1939 census 25,252 Japanese were enumerated. In recent years the Japanese settlements in Davao have attracted considerable attention. The first Japanese came to Davao as plantation laborers in 1904. They were brought by K. S. Ohta, a Japanese merchant in Manila, who was the agent for American hemp and coconut planters. In 1907 Ohta founded, with a group of laborers, the Ohta Development Company in Talomo. At the end of the World War there were about 60 Japanese agricultural corporations active in the province of Davao. According to Japanese sources a total of 46 Japanese companies controlled 25,086 hectares in 1934; a government

⁷ According to information given by the Japanese Consulate, quoted by Kolb, Albert, "Die Japanische Ackerbaukolonie in Davao, Philippinen," *Koloniale Rundschau*, 1938, Vol. 29, p. 216.

committee of investigation reported in 1935 that Japanese owned or controlled approximately 57,350 hectares, of which 28,098 hectares had been acquired in a legally correct way: 8,119 by purchase and 19,970 by lease. The other 29,252 hectares, however, were public land alienated originally to Filipinos and Americans who had turned it over to Japanese under lease, or land or labor contracts. The Philippine government has taken the position that most of these contracts are voidable because they violate the legal conditions under which the public land was turned over to the applicants. Nothing has been done, however, to cancel these supposedly illegal contracts, probably because they will expire within the next few years and the land with all the improvements will go back to the Filipino or American lessors.

Table 29 gives the figures of alien migration from and to the Philippine Islands.

TABLE 29. THE PHILIPPINES: ALIEN IMMIGRATION AND EMIGRATION*

PERIOD	IMMIGRANTS			EMIGRANTS			NET IMMIGRATION
	Total, including others	Chinese	Japanese	Total, including others	Chinese	Japanese	
1909/10-1914 average	3,246	1,806 (a)	1,032 (a)	953	191 (a)	250 (a)	2,293
1925-1929 average	11,862	8,213	2,522	1,134	96	492	10,728
1930-1934 average	8,264	6,144	1,463	1,675	170	1,209	6,589
1935	6,046	4,127	1,536	2,161	169	1,687	3,885
1936	8,445	5,485	2,474	1,862	172	1,525	6,583
1937 (b)	10,620	5,170 (c)	4,170	3,955	1,828	1,935	6,665
1938 (d)	9,551	6,064	2,487	2,839	851	1,675	6,712

(a) Three-year average 1909/10 and 1911/12 omitted.

(b) Philippine Bureau of Labor, *Labor Bulletin*, May 1938

(c) Only 2,024 were issued landing certificates. The others were released under bond pending decision.

(d) Obtained from Immigration Division, Department of Labor, Manila.

Emigration: About 1910 there began a migration of Filipino labor to the sugar plantations of Hawaii, which were in need of labor, when the Japanese government began to restrict Japanese emigration. The Hawaiian sugar industry has become dependent upon Filipino labor to a considerable extent. In about 1920 the Filipinos began to come to continental United States; the census of 1930 reports the presence of

TABLE 30. FILIPINOS IN CONTINENTAL UNITED STATES, 1930

California	...	...	...	...	30,470
Washington	...	...	...	...	3,480
Illinois	...	...	...	...	2,011
New York	...	...	...	...	1,982
Oregon	...	...	...	...	1,066
All others	...	...	...	...	6,199
					45,208

* Annual Reports of the Insular Collector of Customs. 1909/10 figures and 1911/12 figures from *Statistical Bulletin of Philippine Islands*, 1918, p. 8.

THE PHILIPPINES

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45,208 Filipinos on the mainland.⁹ In 1931 the Bureau of Insular Affairs estimated a total of 49,115 Filipinos.

Most of the Filipinos in the continental United States were employed as agricultural laborers or in restaurant, hotel and domestic service; a small number worked in the automobile industry in Detroit. In about 1930 organized labor began to demand the restriction of Filipino immigration. The anti-Filipino sentiment was especially strong on the West Coast. There was no possibility, however, of preventing the immigration of Filipinos as long as they were nationals. This fact strengthened the favorable attitude toward an early grant of Philippine independence. The Independence Act was passed in 1934¹⁰ and limited the immigration of Filipinos to continental United States to an annual quota of 50 until 1946 when the Philippines will become independent. After 1946 immigration will probably stop altogether. The United States Congress also provided for the repatriation of Filipinos,¹¹ which is supposed to be entirely voluntary. At the end of June 1938 only 1,239 Filipinos had made use of the free transportation facilities under the Repatriation Plan.¹² Migration to Hawaii is not affected by the

TABLE 31 DEPARTURES AND ARRIVALS OF FILIPINO CITIZENS FROM THE ISLANDS

(+ = excess of departures from the Islands)

(- = excess of arrivals in the Islands)

A (a)

PERIOD	DEPARTURES			ARRIVALS			NET		
	To U S and Insular Possessions	To Foreign Countries	Total	From U S and Insular Possessions	From Foreign Countries	Total	U S and Possessions	Other Countries	Total
1925-29 Total	68,568	19,022	87,590	21,333	18,446	39,779	+ 47,135	+ 576	+ 47,811
1930-34 Total	23,832	14,866	38,698	32,960	19,135	52,095	- 9,128	- 4,269	- 13,397
1935	404	1,967	2,371	3,175	2,278	5,453	- 2,771	- 311	- 3,082
1936	405	2,740	3,145	2,539	2,909	5,448	- 2,134	- 169	- 2,303

B (b)

PERIOD	TO HAWAII	FROM HAWAII	NET
1909-14	19,039	159 (c)	
1925-29 Total	37,640	18,539	+ 19,101
1930-34 Total	12,923	23,752	- 10,829
1935	65	1,638	- 1,575 (Jan 1 to Nov 14, 1935)
1936	40	1,803	- 1,763 (Nov 15, 1935, to Dec. 31, 1936)

(a) Annual Reports of the Insular Collector of Customs

(b) Bulletin of the Bureau of Labor 1929, No. 27 (for 1909-1929 figures)

Annual Report of the Governor-General, 1931, p. 313, for 1930-31 figures Annual Report of the Secretary of Labor, 1937, for 1932-36 figures

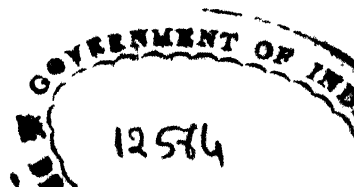
(c) 1913-14 only

⁹ For detailed discussion of the situation after 1930 see Lasker, Bruno, *Filipino Immigration to Continental United States and to Hawaii*, Chicago, 1931 See also Wentworth, Edna C, *Filipino Plantation Workers in Hawaii*, New York, 1941

¹⁰ Philippine Independence Act, Public Law No. 127, Seventy third Congress, usually referred to as the Tydings McDuffie Act

¹¹ Public Law No. 202, Seventy fourth Congress

¹² According to information supplied by the U S Department of Labor



quota and exclusion provisions of the Tydings-McDuffie Act as long as the laborers do not apply for passports or immigration visas but are brought in according to the needs of the industries of the Islands. There were at one time about 70,000 Filipino laborers in Hawaii, but their number dwindled to 53,000¹³ in 1937 due to the depression.

Migration between the Philippines and the United States and Hawaii is summarized in Table 31 which shows a net immigration into Hawaii and continental United States in 1925-29. Since then the number of Filipinos returning to the Islands has surpassed that of those leaving.

¹³ Cariaga, Roman R., "Filipinos in Hawaii," *Pan Pacific*, Jan.-Mar. 1938, p. 72.

6. FRENCH INDO-CHINA

Distribution of the Population: The population problem of Indo-China, like that of the Philippines or of the Netherlands Indies, is one of mal-distribution. The total population of Indo-China in July 1936 was about 23 million and the total area about 740 thousand square kilometers, which gave an average density of 31 persons per square kilometer. This density figure is entirely misleading, however, because it obscures the characteristic feature of the population distribution—great agglomerations in the lowlands while the uplands and mountainous regions are very thinly settled. In 1936, for instance, the density of Annam was 38, of Cambodia 17, of Cochin China 71, of Laos 4 and of Tonkin 75. Of a total population of 23 million, as many as 18 million are squeezed into an area of about 100,000 square kilometers—in other words, 78% of the population occupies only 13% of the total area.¹ There is not only a great contrast between the density of the alluvial lowlands and that of the uplands but also among the densities of alluvial lowlands in different parts of Indo-China. While the reason for the first contrast lies above all in the nature of the country, the second may be attributed to human nature. The alluvial delta lands of the Red River have densities well above 450 persons per square kilometer, while the alluvial plains of Cambodia have only 70 per square kilometer. This contrast arises from the difference in native culture and techniques of land utilization. In the Red River lowlands we find Annamites, who are a race of conquerors, the most intelligent element of the population of Indo-China, excellent, hard-working farmers; in the lowlands of Cambodia live Cambodians and Laotians, who are not industrious and who are indifferent farmers.²

French students of demography have shown that from a social point of view the actual density of population is of only secondary importance. A consideration of the "nutrition density," or the ratio between the number of inhabitants and the area of land actually under cultivation, is much more significant. In the case of Indo-China only rice fields are considered, paddy being the staple food of the population.³ For

¹ Gourou, Pierre, "Densité de la Population et Utilisation du Sol en Indochine Française," *Comptes Rendus du Congrès International de Géographie*, Amsterdam, 1938, p. 417.

² *Labour Conditions in Indo-China*, International Labour Office, Studies and Reports, Series B, No. 26, Geneva, 1938, pp. 4-5.

³ Henri, Y. M., *Economie Agricole de l'Indochine*, Hanoi, 1932, and Henri, Y. M., and de Vienne, M., *Document de Démographie et de Régiculture*, Hanoi, 1928.

example, the area under rice in Tonkin amounts to only about 13,320 square kilometers, or 1,332,000 hectares, so that the "nutrition density" would be 653 per square kilometer of rice field. Table 32 gives both average density and average "nutrition density" figures for 1936.

These figures give a very good idea of the problem, both agrarian and social, which is caused by the congestion of population in Tonkin and North Annam and, in particular, the sparsity of population in Cochin China, which is the richest part of Indo-China. An analysis of the "nutrition density" figures of the provinces of Tonkin shows that even within Tonkin there are great variations. The province of Quang-Yên has a "nutrition density" of 2,300; Yenbay, 1,143; Hadông, 1,126; Bakan, 825; Nam-dinh, 785; and Thai-binh, 785.⁴ It should be kept in mind that these are not densities of industrial areas but of purely agricultural regions where up to 95% of the people are peasants.⁵

TABLE 32. INDO-CHINA: POPULATION DENSITY AND NUTRITION DENSITY, 1936⁶

REGION	TOTAL AREA	POPULATION	DENSITY	RICE AREA	NUTRITION DENSITY
	In thousand sq. km.	In thousands	Persons per sq. km.	Sq. km.	Persons per sq. km.
Annam	147.6	5,656	38	9,410	601
Cambodia	181.0	3,046	17	6,940	439
Cochin China	64.7	4,616	71	21,110	219
Laos	231.4	1,012	4	3,820	265
Tonkin	115.7	8,700	75	13,320	653

Population pressure is most acute in the Tonkin delta and in the adjacent portion of Annam. The further south one goes along the coast of the China Sea the less the country is crowded; in Cochin China there is actually a great shortage of agricultural labor.

One method of dealing with the Indo-Chinese population is redistribution, that is, a transfer of Annamites from Tonkin and Northern Annam to Cochin China, Cambodia and Laos. For a long time the lack of communications was a great obstacle, but the Trans-Indo-Chinese Railroad has finally been completed. The greatest obstacle still remains—the intense aversion of the Annamite peasants to leaving their alluvial homelands and moving even into the uplands of their own country; much greater is their reluctance to migrate to other parts of the Union, to face differences in climate, people, language and customs, and the corollary danger of great hostility on the part of the local inhabitants.⁷

Table 33 on page 44 gives figures on the racial composition of Indo-China in 1921, 1931 and 1936.

⁴ *Labour Conditions in Indo-China*, p. 217.

⁵ For an excellent and very detailed study on Tonkin see Gourou, P., *Les Paysans du Delta Tonkinois*, Publications de l'École Française d'Extrême-Orient, Paris, 1936.

⁶ Area and population figures from *Annuaire Statistique de l'Indochine*; rice area figures from *International Yearbook of Agricultural Statistics*.

⁷ See especially *Labour Conditions in Indo-China*, Part III, Chapter III.

Migration: The most numerous foreign element is the Chinese, the principal concentrations of whom in 1936 were in Cochin China and Cambodia. In the former 171,000 Chinese constituted 3.7% of the population; in the latter 106,000 Chinese constituted 3.5% of the population.⁸ The Chinese have been especially attracted to Cochin China and Cambodia because of the sparse population, fertile land and a network of waterways that have furthered their trading activities. They are not found in the rice fields, although a few are agriculturists—owning and working most of the pepper plantations in these two states. Above all, the Chinese are traders and merchants; they control especially the rice trade and therefore play a very important part in the economic life of the country.

In 1931 there were as many as 418,000 Chinese in Indo-China (2% of the total population) but during the depression a considerable number were forced to leave the country, so that for several years emigration surpassed immigration. Since 1934 immigration has revived, but in spite of this the total number amounted to only 326,000 or 1.4% of the population in July 1936.

TABLE 33. INDO-CHINA: RACIAL COMPOSITION
OF THE POPULATION⁹

RACIAL GROUP	1921		1931		1936	
	Total (in thousands)	Per 1,000	Total (in thousands)	Per 1,000	Total (in thousands)	Per 1,000
Europeans	25	1	42	2	43	2
Annamites	13,895	739	15,765	735	16,679	724
Muong	165	9	153	7	211	9
Thai	1,055	56	1,154	53	1,375	60
Man or Yao	72	4	92	4		
Meo	80	4	90	4	214	9
Indonesians (Moi, Phong, Stieng, Kha)	681	36	847	40	1,017	44
Cambodians	2,275	121	2,682	125	2,925	127
Sino-Cambodians	68	4	...	...	...	...
Minh-Huong (Sino-Annamites)	64	3	73	3	73	3
Malays and Siamese	66	4	91	4	104	5
Other races native to Fr. I.	63	3	35	2	57	3
Chinese	293	16	418	20	326	14
Indians	4	...	10	1	6	0
Total	18,806	1,000	21,452	1,000	23,030	1,000

The *Economic Handbook of the Pacific Area* gives figures for Chinese migration to and from the provinces of Cochin China and Tonkin up to 1930. From 1931 to 1933 there was a return movement from Cochin China, whereas only in 1932 and 1937 did Tonkin have an excess of departures of Chinese. The number of arrivals in Cochin China in 1937 surpassed that of any year since 1923.

⁸ Robequain, Charles, *L'Evolution Economique de l'Indochine Française*, Centre d'Etudes de Politique Etrangère, Travaux des Groupes d'Etudes, Pub. No. XIII, Paris, 1939, p. 42.

⁹ *Annuaire Statistique de l'Indochine*.

Since 1923 there has been a small migration of laborers between Tonkin and Annam on the one hand and New Caledonia and the New Hebrides on the other. In spite of their small number the laborers

TABLE 34. INDO-CHINA: MIGRATION OF CHINESE AND OTHER ASIATICS¹⁰

Chinese

PERIOD	ARRIVALS				DEPARTURES				NET ARRIVALS (+) DEPARTURES (-)
	Males	Females	Children	Total	Males	Females	Children	Total	
1925-29 Average	32,791	14,071	14,218	61,080	21,814	7,144	7,203	36,161	+ 24,919
1930-34 Average	23,905	12,495	11,360	47,760	28,881	9,658	10,419	48,948	- 1,198
1935	19,741	12,746	11,401	43,888	12,888	8,621	6,634	28,143	+ 15,745
1936	26,027	14,694	12,704	53,425	19,885	9,952	7,734	37,571	+ 15,854

Indians and Other Asiatics

PERIOD	ARRIVALS				DEPARTURES				NET ARRIVALS (+) DEPARTURES (-)
	Males	Females	Children	Total	Males	Females	Children	Total	
1925-29 Average	1,122	48	192	1,362	663	66	105	834	+ 528
1930-34 Average	772	20	135	927	990	139	273	1,402	- 475
1935	532	14	39	585	572	12	32	616	- 31
1936	461	9	45	515	422	7	40	469	+ 46

TABLE 35. INDO-CHINA: CHINESE ARRIVALS IN AND DEPARTURES FROM COCHIN CHINA AND TONKIN¹¹

ITEM	1931	1932	1933	1934	1935	1936	1937
COCHIN CHINA							
Arrivals	28,300	20,900	21,700	25,200	30,900	35,700	51,400
Departures	34,500	35,900	30,300	20,200	18,400	20,600	17,800
Net	- 6,200	- 15,000	- 8,600	5,000	12,500	15,100	33,600
TONKIN							
Arrivals	27,600	13,100	12,900	11,300	11,300	16,600	18,000
Departures	26,000	13,200	11,900	11,300	8,100	15,900	18,100
Net	1,600	- 100	1,000	..	3,200	700	- 100

TABLE 36. INDO-CHINA: LABORERS RECRUITED IN TONKIN AND ANNAM FOR WORK IN FRENCH PACIFIC POSSESSIONS¹²

(Excluding children under 15 years accompanying their parents)

PERIOD	DEPARTED	RETAINED
1925-29 Average	2,154	342
1930-34 Average	437	2,116
1935	926	1,307
1936	370	237
1937	1,470	75

¹⁰ *Ibid.*

¹¹ *Ibid.*

¹² *Ibid.* The two main destinations of these workers are New Caledonia and the New Hebrides.

have become a very important factor in the development of these colonies. The fall of prices for colonial products during the depression, however, caused a considerable repatriation of workers.

In 1905 the plantation owners of Cochin China and Cambodia began to recruit coolies from Tonkin and Annam to augment the sparse and unreliable local supply of labor.¹³ The labor demand rose especially with the rapid growth of the rubber industry. Table 37 shows the number of coolies who migrated with their families southward to the plantations, and the number of those returning.

TABLE 37. INDO-CHINA: CONTRACT COOLIES FROM TONKIN AND ANNAM, WITH THEIR FAMILIES, GOING TO AND RETURNING FROM COCHIN CHINA AND CAMBODIA¹⁴

	GOING TO			RETURNING FROM			NET DEPARTURES OR ARRIVALS(-)
	Cochin China	Cambodia	Total	Cochin China	Cambodia	Total	
1925-29 (a)	8,928	1,900	10,828	1,893 (b)	303 (b)	2,196 (b)	8,632
Average (c)	2,084 (d)	851 (d)	2,935 (d)	392 (b)	49 (d)	442 (b)	2,493
1930-34 (a)	3,256	1,804	5,060	4,950	1,658	6,608	- 1,548
Average (c)	459	235	694	706	620	1,326	632
1935 (a)	2,240	1,410	3,650	1,220	480	1,700	1,950
(c)	410	40	450	180	120	300	150
1936 (a)	5,102	3,353	8,455	2,100	1,350	3,450	5,005
(c)	360	190	550	250	100	350	200

(a) Coolies from Tonkin (b) Three-year average, 1927-29 (c) Coolies from Annam (d) Four-year average, 1926-29

¹³ *Labour Conditions in Indo-China*

¹⁴ *Annuaire Statistique de l'Indochine*

7. THAILAND

Distribution of Population: The population of Thailand is largely concentrated on alluvial plains and in river valleys, where the cultivation of wet rice is possible. The highest density is found in Middle Thailand on the alluvial plains of the Menam and Mekong Rivers. Smaller

TABLE 38. THAILAND: AREA, POPULATION AND DENSITY OF THE MAIN NATURAL REGIONS, 1929

REGION	AREA IN SQ. KM.	POPULATION	DENSITY PER SQ. KM.
North Thailand	111,634	1,706,390	15
Middle Thailand, Total	96,606	3,726,856	39
North	63,076	865,922	14
South	33,530	2,860,934	86
East Thailand	165,771	3,895,275	24
Southeast Thailand	30,690	397,965	13
West Thailand	36,723	281,357	8
Peninsula	76,960	1,498,364	19
Total	518,384	11,506,207 ✓	22 ✓

aggregations occur on the southeast coast of the Malay Peninsula and in the upper reaches of the west branch of the Menam around Chiang-mai.¹ The mountainous regions of Thailand have only a scant population. Table 38 gives the area, population and density of the main natural regions into which the country has been divided by Credner in his classic regional geography of Thailand.²

As of 1920-30 Credner estimated 10,180,000 people (or 88.5%) in agricultural villages, 720,000 in towns and markets, and 600,000 in Bangkok. The population has been increasing at a rapid rate, and today has reached about 14,000,000.³

TABLE 39. THAILAND: GROWTH OF POPULATION⁴

1911 (Census)	8,266,000
1919 (Census)	9,207,000
1925 (Estimate)	10,485,000
1929 (Census)	11,506,000
1934 (Estimate)	13,198,000
1935 (Estimate)	13,588,000
1936 (Estimate)	13,989,000
1937 (Census) (a)	14,464,000

(a) Preliminary.

Racial Composition: Most of the people of Thailand belong to the Thai, who came from the Yunnan region and were pressed southward by the Chinese, along the river valleys. Credner estimates that out of a total of 11.5 million in 1929 as many as 9.85 million were members of the Thai group, which he subdivides in the manner illustrated in Table 40.

TABLE 40. THAILAND: THAI GROUP⁴

Thai (Siamese proper)	about 4.5	million
Fast Laotians	„ 3.2	„
North Laotians	„ 2.0	„
Putai	„ 0.07	„
Lu	„ 0.05	„
Shan	„ 0.03	„
Total	9.85 million	

Among the foreign populations of Thailand, the most numerous are the Chinese, of whom 445,300 were counted in the census of 1929. Credner estimates their number at 800,000. He is of the opinion that 2 million people in Thailand (including the descendants of Chinese males and Siamese women) have Chinese blood.⁵ Chinese authorities report a total of 2½ million Chinese in Thailand. The main immigration of

¹ Zimmerman, Carl C., "Some Phases of Land Utilization in Siam," *The Geographic Review*, Vol. XXVII, 1937, p. 383.

² Credner, Wilhelm, *Siam: Das Land der Tai*, Stuttgart, 1935, p. 99.

³ *Statistical Year Book of the Kingdom of Siam*.

⁴ Credner, *op. cit.*, p. 176.

⁵ *Ibid.*, p. 195.

Chinese has taken place in the last 50 years. Since Thailand has been drawn into world trade and since Bangkok has become an important rice-export harbor, Thailand has had a great attraction for Chinese; they have concentrated especially in Bangkok and in other large communities. As in other countries of Southeastern Asia, the Chinese are found in the mines and on plantations; they are the middlemen, traders and merchants; above all they control the rice trade. In the last two years for which there are available figures, 1933-34 and 1934-35, the number of Chinese departing from Thailand was larger than that of those entering, while in previous years there was always a net immigration of Chinese.⁶

TABLE 41. THAILAND: CHINESE MIGRANTS GOING THROUGH THE PORT OF BANGKOK⁷

PERIOD	ARRIVALS	DEPARTURES	EXCESS OF ARRIVALS OR DEPARTURES
Average 1925/26-1929/30	97,010	59,492	37,518
1930/31-1934/35	51,490	41,480	10,010
1933/34	15,648	30,176	-14,528
1934/35	24,282	29,305	-5,023
1935/36	30,964	..	..
1936/37	37,152	..	..
1937/38	44,143	..	..

⁶ See also Landon, K. P., *The Chinese in Thailand*, New York, 1941.

⁷ *Statistical Year Book of the Kingdom of Siam*. Unfortunately, the most recent edition of the *Year Book* does not give departures in this category after 1934/35. Chinese passenger traffic through Bangkok showed the following excess of arrivals: 1935/36, 7,956; 1936/37, 11,141; and 1937/38, 22,546.

8. BRITISH MALAYA

Racial Composition and Regional Distribution of Population: Both in composition and in distribution the population of British Malaya (which includes the Straits Settlements,¹ the Federated Malay States² and the Unfederated Malay States³) shows remarkable features. Of the total population of 4,385,346 in 1931, Malays accounted for only 1,962,021 or 44.7%,⁴ Chinese for 1,709,392 or 39.0%, and Indians for 624,009 or 14.2%. The Malays are thus considerably out-numbered by other races; moreover, their share of the total population, which in 1921 had been 49.2%, is decreasing. Furthermore, of the 1,962,021 Malays, as many as 317,848, or 7.2%, are classified as "other Malaysians" by the census, which means that they are immigrants from Thailand or from the Netherlands East Indies. Table 42 gives the racial composition of the population in the various political units.

While the Malays ("other Malaysians" included) represent only 25.6% of the population in the Straits Settlements and 34.7% in the Federated Malay States, they account for as many as 69.6% in the Unfederated Malay States.

¹ Straits Settlements: Settlement of Singapore, Penang and Malacca. Labuan, Christmas Island and the Cocos Islands are a part of the Settlement of Singapore. The Census of Malaya for 1931 also includes the State of Brunei.

² Federated Malay States: Perak, Selangor, Negri Sembilan and Pahang.

³ Unfederated Malay States: Johore, Kedah, Kelantan, Trengganu and Perlis.

⁴ Both Malays of British Malaya and immigrant Malays whom the Census calls "other Malaysians."

The number of Chinese in the Straits Settlements amounts to 59.6%; in Singapore, 74.3%; in Penang, 49.0%; and in Malacca, 34.9%. The Chinese are the most numerous race "in the Federated Malay States as a whole and in Perak, Selangor and Negri Sembilan individually"⁵ and in Johore, while in the remaining States they are far less important, their share falling as low as 5% in Kelantan. The Chinese population of British Malaya is classified according to the language spoken. The census of 1931 distinguishes between Hokkien, Cantonese, Hakka, Tiu Chiu, Hailam, Kwongsai, Hok Chiu and Hok Chhia, given in order according to their numerical strength. The first five groups are by far the most important and represent 92.7% of all Chinese in Malaya.

TABLE 42. BRITISH MALAYA RACIAL COMPOSITION OF POPULATION IN 1931⁶

RACIAL GROUP	BRITISH MALAYA		STRAITS SETTLEMENTS		FEDERATED MALAY STATES		UNFEDERATED MALAY STATES	
	Number	%	Number	%	Number	%	Number	%
Malays	1,644,173	37.5	250,864	22.5	443,618	26.0	949,582	61.0
Other Malaysians	317,848	7.2	34,452	3.1	150,113	8.7	133,243	8.6
Chinese	1,709,392	39.0	663,518	59.6	711,540	41.5	333,540	21.4
Indians	624,009	14.2	132,277	11.9	379,996	22.2	111,328	7.2
Europeans	17,768	0.4	10,003	0.9	6,350	0.4	1,355	0.1
Eurasians	16,043	0.4	11,292	1.0	4,251	0.2	478	
Others	56,113	1.3	11,609	1.0	17,228	1.0	27,213	1.7
Total	4,385,346 (a)	100.0	1,114,015	100.0	1,713,096	100.0	1,556,739	100.0

(a) Includes 1,496 unlocated persons

The Indian element does not outnumber the other races in any district. In the Straits Settlements, Indians account for 11.9% of the population; in the Federated Malay States, 22.2% (in Selangor their share is as high as 29.2%, which surpasses the Malay 23.1% but not the Chinese 45.3%), and in the Unfederated Malay States, 7.1%. In the last, however, only Johore and Kedah have a sizable Indian population, while Perlis, Kelantan and Trengganu have a negligible number. The bulk of the Indians are Madrasis, who can be grouped into Tamil, Telugu and Malayali according to their language. Of a total of 624,000, as many as 582,600 Indians come from Southern India.⁷

The distribution of the population is largely determined by the structure and configuration of the peninsula. British Malaya can be divided into two uneven parts, as far as population is concerned. The western section, with an average width of only 40 miles and stretching along the whole peninsula, contains by far the greater part of the population, and probably 95% of the immigrants. In this belt are found all important mining and plantation districts and all of the urban settlements of Malaya. The eastern part of the peninsula, i.e., the land east of the main divide, is undeveloped, forest-covered country, and therefore practically uninhabited. The Malay population is concentrated along rivers

⁵ Vlieland, C. A., *A Report on the 1931 Census*, London, 1932, p. 38

⁶ Vlieland, C. A., *op. cit.*

⁷ *Ibid.*, pp. 82-83

and along the coast. The only densely settled area lies in Kelantan, near the Siamese border. British Malaya is an agricultural country with relatively little urbanization.

Population Growth and Immigration: The growth of the population of British Malaya is determined not so much by birth and death rates as by migration. Table 43 shows the growth in the different parts of Malaya as of 1911, 1921 and 1931.

TABLE 43. BRITISH MALAYA: GROWTH OF THE POPULATION*
(In thousands)

POLITICAL UNIT	CENSUS			ESTIMATE	PERCENTAGE INCREASE SINCE PREVIOUS CENSUS	
	1911	1921	1931	Dec. 31, 1938	1921	1931
Straits Settlements	714.0	883.7	1,114.0	1,357.9	23.7	26.1
Federated Malay States	1,037.0	1,324.9	1,713.1	2,103.7	27.7	29.3
Unfederated Malay States	921.7	1,149.5	1,556.7	1,817.3	24.7	35.4
Total Malaya	2,672.7	3,358.1	4,385.3 (a)	5,278.9	25.6	30.6

(a) 1.5 unlocated.

For centuries the Malay Peninsula has been receiving immigrants: Malays from Sumatra, Chinese from Southern China and in modern times Javanese and Southern Indians; so that today Malaya has a unique population mixture. A good many of the immigrants of the 19th and 20th centuries, however, have been of the laboring class and have stayed for only a few years. Whereas the migration statistics for Indian coolies have been fairly accurate in the last 25 to 30 years, Chinese migration statistics have very little value and cannot be used for estimating the migrational growth of population in Malaya. The Chinese Protectorate reports that, in the years 1921 to 1930, 2,417,941 Chinese immigrants arrived in Singapore and that 1,172,375 Chinese deck passengers left for China, which would give a difference of 1,245,566; whereas actually the Chinese population grew by about 534,000, of which about 55,000 can be accounted for by the excess of births over deaths.

One of the results of large-scale immigration is the abnormality of the age distribution. Less than 57% of the population of Malaya was born there; the rest are immigrants, the majority of whom are of laboring age. It is therefore impossible to make the deductions which the age tables of a country with a stable population allow. Instead of a continuous decrease in each successive age period, the percentages for the age groups from 20 to 34 are higher than in a country with a normal population structure.

A very high percentage of the immigrants from China and India are men; the proportion of females, however, has risen steadily. In 1911 there were only 572 women to every 1,000 men in British Malaya; in 1921 the figure had increased to 628, and in 1931 to 688. While the

* *Malayan Year Book*, 1939, pp. 33, 36, 37.

sex ratio of the Malayan-born population is normal, that of the non-Malayan-born population of all races is unfavorable: 397 females per 1,000 males in 1931.⁹ Sex ratios for the different races, however, vary considerably. Table 44 shows the sex ratios of Chinese for 1911, 1921 and 1931. The sex ratio in the various parts of British Malaya no doubt influences the mobility of the Chinese element in each part.

TABLE 44. BRITISH MALAYA: CHINESE SEX RATIOS¹⁰

POLITICAL UNIT	1911	1921	1931
Straits Settlements	358	479	612
Federated Malay States	188	351	492
Johore	116	230	358
Kedah	172	252	458
Kelantan	362	360	464
Trengganu	279	190	279
Perlis	233	333	424
British Malaya	247	384	436

Of the 624,000 Indians counted in 1931, 203,000 were females and 421,000 males, which gives a sex ratio of 482, whereas the sex ratio of 1921 was 406.¹¹ The Indian population is made up mainly of migrants; those who have settled permanently form only a small proportion.

The great turnover and the unfavorable sex ratios, of course, affect the relation between birth and death rates considerably. As Vlieland points out, until the second decade of the present century the number of women in Malaya was relatively so small that "despite their fecundity and a general death rate by no means discreditable to an equatorial country, it was utterly impossible for the number of births to exceed the number of deaths."¹² Since then the sex ratio has improved, until in recent years the number of births has exceeded the number of deaths.

Migration: The two leading industries of British Malaya—rubber plantations and tin mines—as well as public services, have always been dependent upon labor supplied from the outside. Rubber and other agricultural estates employ chiefly Indians; mines are worked by Chinese, and public works by Chinese and Indians. General economic conditions have a direct influence upon the rise and the direction of the flow of migrants. In prosperous years British Malaya can absorb many thousands of Chinese and Indians whereas slump years bring about large-scale emigration.

The immigration of Indian labor is well organized and supervised by both the Malayan and Indian governments. The Indian Emigration Act of 1922 regulates the elaborate machinery which has been set up

⁹ *Ibid.*, pp. 50-51.

¹⁰ Vlieland, C. A., *op. cit.*, p. 52.

¹¹ *Ibid.*, p. 53.

¹² Vlieland, C. A., "The Population of the Malay Peninsula; A Study in Human Migration," *Geographical Review*, Vol. 24, 1934, p. 77.

in order to supply the plantations of Malaya with their labor force. Only the Presidency of Madras is open to recruitment for Malaya. The immigrants fall into two classes: (1) assisted immigrants, i.e., laborers and their dependents who come at the expense of the Indian Immigration Fund to be employed by estates or public services; and (2) non-assisted immigrants, who pay their own passage. A high percentage of the non-assisted immigrants are of the laboring class, the rest being mostly traders, etc.

Table 45 shows the migration of Indians in both directions.

TABLE 45. BRITISH MALAYA: MIGRATION OF INDIANS¹³

PERIOD	IMMIGRATION			EMIGRATION		
	Total	Assisted	Non-Assisted	Total	Assisted	Non-Assisted
1909-13						
Average	93,504	65,239	28,265	50,506	..	..
1925-29						
Average	119,790	90,570	29,220	73,110		
1930	69,114	42,771	26,343	151,735	77,761	73,974
1931	19,692	111	19,581	101,347	56,119	45,228
1932	17,734	17	17,717	84,501	56,476	28,025
1933	20,242	20	20,222	32,738	9,338	23,400
1934	89,828	45,469	44,359	28,068	1,959	26,109
1935	65,191	20,771	44,420	38,392	6,185	32,207
1936	43,191	3,754	39,437	40,075	8,629	31,446
1937	122,566	54,849	67,717	44,486	6,566	37,920

The numbers of laborers whose coming is financed by the Indian Immigration Fund reveal the ups and downs in the economic life. Recruiting stopped on August 1, 1930, and was not resumed until May 1934, when improved prices forced the various enterprises to increase their labor force. During the depression years the Indian Immigration Fund was used to repatriate Indian laborers.

Chinese immigration is not so well organized but it also is subject to regulation in the interests of the immigrant. In 1880 the colonial authorities created the "Chinese Protectorate" in Singapore, an office which since that time has handled all affairs dealing with Chinese migration. In contrast to the Indians recruited for work in Malaya, the Chinese migrants have to pay their own passage. Beginning on August 1, 1930, the immigration of adult male laborers was restricted, by proclamation under the Immigration Restriction Ordinance, to a total of 6,016 per month. From January to September 1931, the quota was fixed at 5,238, and from October 1931 to July 1932 at 2,500 per month. From August 1932 to March 1933 the quota stood at 1,000 per month. From April 1, 1933, the restriction was imposed under the Aliens Ordinance, and applied not only to adult laborers but to all adult alien Chinese males. From April 1, 1933, to April 30, 1934, the quota allowed

remained for the rest of 1937. These restrictions apply to immigrants who come in on ships of the six quota companies especially interested in the migration of Chinese. Other shipping companies are allowed to bring in a total of 25 immigrants a month each. The restrictions do not apply to women and children, so that the number of women per thousand men immigrants has risen constantly and in 1937 was as high as 948, which is a record high for Chinese women coming to Malaya.

Table 46 shows the variations in the flow of deck passengers between China and Malaya. While the years 1931-33 saw a large-scale exodus of Chinese laborers, the direction of the stream changed again in 1934 and since then the number of Chinese immigrants has increased steadily.

TABLE 46. BRITISH MALAYA: MIGRATION OF CHINESE DECK PASSENGERS¹⁴

YEAR	INCOMING DECK PASSENGERS	RETURNS DECK PASSENGERS
1930	242,149	167,903
1931	79,085	212,900
1932	33,534	161,809
1933	27,778	86,555
1934	98,864	68,129
1935	141,892	69,025
1936	143,331	80,578
1937	239,106	66,502

The net movements of both Chinese and Southern Indian laborers are summarized in Table 47. (The figures, however, differ in some instances from Table 46.)

TABLE 47. BRITISH MALAYA: NET ARRIVALS AND NET DEPARTURES (—) OF LABORERS¹⁵
(In thousands)

RACE	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Chinese	99.8	19.1	- 133.8	- 128.3	- 58.1	41.1	76.8	69.2	176.8	50.5
Southern Indians	37.8	- 78.4	- 81.2	- 66.3	- 12.3	61.8	27.2	3.4	78.2	- 31.2

¹⁴ Based on *Annual Reports on the Social and Economic Progress of the People of the Straits Settlements*, Annual Colonial Reports, H. M. Stationery Office, London.

¹⁵ *Malayan Year Book*.

9. NETHERLANDS INDIES

Distribution and Composition of Population: Historically and administratively the Netherlands Indies are divided into Java, including Madura, on one hand, and all other islands (referred to as the Outer Territories or Outer Provinces) on the other. The reason for this division lies in the fact that from the beginning of the colonial history Java and Madura have been more densely settled and more developed than the Outer Provinces so that they have been the focal point of Dutch colonial interest.

In 1930 the total population of the Netherlands Indies amounted to 60,727,000, distributed as shown in Table 48.

TABLE 48. NETHERLANDS INDIES: AREA AND POPULATION, 1930¹

ADMINISTRATIVE DIVISION	AREA		TOTAL POPULATION		NATIVE POPULATION		DENSITY OF POPULATION PER SQ. KM.	
	Sq. km.	%	Number	%	Number	%	Total	Native
Java and Madura Outer Provinces	132,174.1	6.9	41,718,000	68.7	40,891,000	69.1	315.6	309.0
	1,772,171.6	93.1	19,009,000	31.3	18,247,000	30.9	10.7	10.3
Netherlands Indies	1,904,345.7	100.0	60,727,000	100.0	59,138,000	100.0	31.9	31.1

Table 48 shows the outstanding characteristic of the Netherlands Indies as far as population distribution is concerned: Java and Madura, which contain 6.9% of the total area, have 68.7% of the total population, while the Outer Provinces, with 93.1% of the total area, have only 31.3% of the population. If only the natives are considered, the average density of Java and Madura is 309 persons per square kilometer, while the Outer Provinces have a density of 10.3 and the average density of the country as a whole is 31.1 per square kilometer.

TABLE 49. NETHERLANDS INDIES: GROWTH OF NATIVE
POPULATION DENSITY PER SQUARE KILOMETER²

ADMINISTRATIVE DIVISION	1900	1905	1920	1930
Java and Madura	215	227	260	309
Outer Provinces	...	4.1	7.9	10.3
Netherlands Indies	...	19.7	25.4	31.1

Not only is there an enormous discrepancy between the densities of Java and the Outer Provinces; even within Java there are considerable, striking density differences, as can be seen from Table 50.

TABLE 50. NETHERLANDS INDIES: NATIVE POPULATION DENSITY
OF JAVA AND MADURA³

(Per square kilometer)

POLITICAL DIVISION	1900	1905	1920	1930
West Java	143	154	191	235
Middle Java	313	319	347	389
Jokjakarta	342	353	401	486
Surakarta	240	253	336	420
East Java	215	231	258	309
Total	215	227	260	309

¹ *Indisch Verslag*, 1939, pp. 15, 16, 28. According to the latest official estimate, the population of Java in 1940 was 48 millions, and of the Outer Provinces 22 millions.

² *Indisch Verslag*, 1932, pp. 15, 16.

³ *Ibid.*

West Java is not as densely settled as Middle and East Java and the native states, Jokjakarta and Surakarta. The most densely populated rural districts in Java are situated in the regencies of the northern coastal plains of Middle Java (Cheribon, Tegal and Pekalongan) and in the native states, Jokjakarta and Surakarta.

TABLE 51. NETHERLANDS INDIES: POPULATION DENSITY
IN CERTAIN DISTRICTS OF JAVA, 1930⁴
(Persons per square kilometer)

DISTRICT	
Adiwerno (Tegal regency)	1,638
Plumbon (Cheribon regency)	1,075
Wiradesa (Pekalongan regency)	979
Pandak (Bantul regency)	897
Delanggu (Klaten regency)	894

These high densities in rural districts are possible—to mention only some of the factors—because of the relatively small percentage of uncultivated ground, the high percentage of cultivated land occupied by *sawahs* (i.e., irrigated rice fields) and the presence of Western agricultural enterprises offering employment to farmers and landless agricultural workers, i.e., the sugar industry.

The composition of the population of the Netherlands Indies is of great interest. For census purposes the population is divided into Natives, Europeans, Chinese and other non-indigenous Asiatics.

TABLE 52. NETHERLANDS INDIES. RACIAL COMPOSITION OF
THE POPULATION, 1930⁵

ADMINISTRATIVE DIVISION	NATIVES	EUROPEANS (a)	CHINESE	OTHER NON INDIGENOUS ASIATICS	TOTAL
Sumatra	7,745,227	28,496	448,552	32,568	8,254,843
Java and Madura	40,891,093	192,571	582,431	52,269	41,718,364
Borneo	2,017,072	5,639	134,287	11,663	2,168,661
Celebes	4,173,603	7,683	41,402	9,218	4,231,906
Bali and Lombok	1,788,843	549	10,949	2,342	1,802,683
Timor	1,646,101	979	6,867	3,429	1,657,376
Moluccas and New Guinea	876,128	4,500	8,726	4,046	893,400
Netherlands Indies (b)	59,138,067 (b) 97.4%	240,417 0.4%	1,233,214 2.0%	115,535 0.2%	60,727,233 (b) 100%

(a) All Occidentals in the broadest interpretation of the word are included. But other non-indigenous persons who stand before the law in the Netherlands Indies on a parity with Europeans were also included in this group—namely Japanese, Egyptians, Armenians, Turks, etc. The natives and non-indigenous Orientals who have been granted equivalent standing to the Europeans were also enumerated as "Europeans."

(b) Figures include persons i.e., natives, in regions where only a rough estimate was made. The columns "Natives" and "Total" do not add up.

The 240,000 Europeans represent less than 0.5% of the total population of the Netherlands Indies; their economic and political importance, however, far exceeds their numerical ratio. They represent the "upper class" in the society of the Netherlands Indies. In Nether-

⁴ Kuperus, G., "The Relation between Density of Population and Utilization of Soil in Java," *Comptes Rendus du Congrès International de Géographie*, Amsterdam, 1935, Leiden, 1938, Vol. II, Section IIIc, p. 466.

⁵ *Volkstelling 1930*, Deel VIII, Overzicht voor Nederlandsch-Indië, Batavia, 1936.

lands India the term "European" is only a legal one and disregards race. Included in Table 52 are all the so-called Indoeuropeans, i.e., offspring of mixed marriages, whose number is very difficult to estimate because the census does not deal with them separately. In 1854 they outnumbered the pure whites, and a total estimate of 100,000 is probably not far wrong.

The Europeans have increased faster in the present century than the native population because of the great economic uplift since the turn of the century, especially in the sugar industry of Java and the rubber industry of Sumatra.⁶

About 80% of the Europeans live in Java and of the remaining 20% more than half live in Sumatra. In Java 70% of the Europeans are concentrated in cities, while an additional 9.8% are found in small country towns.

TABLE 53. NETHERLANDS INDIES: INCREASE OF THE EUROPEAN POPULATION⁷

ADMINISTRATIVE DIVISION	1905 (a)	1920 (b)	1930
Java	72,919	133,743	192,571
Outer Provinces	21,178	34,371	47,846
Netherlands Indies	94,518 (c)	168,114	240,417
Average Annual Increase	3.91%		3.64%

(a) Including soldiers

(b) Excluding ship personnel

(c) Including a small number of soldiers in transit

The Chinese are more widely dispersed over the Netherlands Indies than the Europeans but they too concentrate a good deal in urban settlements. More than half of the 1,233,000 Chinese live in the Outer Provinces (especially in Sumatra and the tin islands, Banka and Billiton) and in Borneo, where we find them above all as independent farmers in West Borneo.⁸ Chinese labor has been very important in the development of the plantation industry of the Outer Provinces, especially in the Province of the East Coast of Sumatra. Since about 1906, however, they have been overtaken numerically by Javanese labor, and since about 1913 their number has decreased steadily so that by 1936 only 12,000 Chinese coolies were working on the plantations on the East Coast of Sumatra.⁹ "More than is the case with any of the other racial groups the Chinese are found in every economic stratum. Large capitalists, bankers, agricultural concessionaires, as well as the humblest day laborers, are counted among them, but their most important rôle in the economic life of the country is that of middlemen and small tradesmen."¹⁰

⁶ Lehmann, Herbert, "Die koloniale Oberschicht der Bevölkerung von Niederländisch-Indien (mit besonderer Berücksichtigung der Deutschen)," *koloniale Rundschau*, Vol. 29, 1938, p. 100

⁷ *Indisch Verlag*, 1937, p. 33

⁸ Cator, W. J., *The Economic Position of the Chinese in the Netherlands Indies*, issued under the auspices of the Secretariat of the I.P.R., Oxford, 1936

⁹ Pelzer, *Arbeiterwanderungen in Südostasien*, pp. 105-106

¹⁰ Vandenbosch, Amry, *The Dutch East Indies*, Grand Rapids, 1933, p. 32

A good many of the Chinese who were born in the Netherlands Indies are of mixed parentage but again, as in the case of the Indo-europeans, there are no figures on the number of so-called Indochinese.

Chinese immigration into the Netherlands Indies has decreased considerably from the pre-depression rate, as Table 55 shows, and we have to wait for the outcome of the next census to see what the depression has done to the growth of the Chinese population.

Among the "other non-indigenous Orientals," the presence of Arabs and British Indians should be especially mentioned.

TABLE 54. NETHERLANDS INDIES: INCREASE OF THE CHINESE POPULATION¹¹

ADMINISTRATIVE DIVISION	1905	1920 (a)	1930
Java and Madura	295,193	383,614	582,431
Outer Provinces:			
Sumatra	195,191	304,082	448,552
Borneo	55,522	82,990	134,287
Celebes	11,862	23,256	41,402
Moluccas	2,314	4,163	8,726
Timor	1,560	3,721	6,867
Bali and Lombok	1,807	7,213	10,949
Total, Outer Provinces	268,256	425,425	650,783
Netherlands Indies	563,449	809,039	1,233,214
Average Annual Increase		2.44%	4.31%

(a) Excluding ship personnel.

TABLE 55. NETHERLANDS INDIES: IMMIGRATION OF CHINESE¹²

1925-29 Annual Average	35,119
1930-34 Annual Average	12,660
1935	8,054
1936	8,046
1937	13,333
1938	11,767

Growth of the Population of Java: The phenomenal growth of the population of Java during the 19th and the beginning of the 20th century has created a major problem for the Dutch colonial administration. During the 18th century the population of Java seems to have remained practically stationary, kept down by bloody wars, general unrest and epidemics. In 1802 Engelhardt estimated the inhabitants of Java and Madura at 3,500,000. According to the census taken by Raffles in 1816, the population amounted to almost 5 million. In 1845 Bleeker estimated the number of Java's inhabitants at 9.4 million.

¹¹ *Indisch Verslag*, 1937, p. 42.

¹² *Indisch Verslag*.

Table 56 gives the increase of the native population of Java and Madura according to figures published by the Census Bureau in Batavia.

In the year 1930 the native population of Java and Madura numbered almost 41,000,000 persons and was therefore about ten times as numerous as at the beginning of the 19th century. Throughout the 19th century the population increased rapidly, and only toward its end and especially in the first two decades of the present century did the rate of growth slow down. The small rate of increase in the period 1905-1920 was partly a result of plague, which was first recognized in the Netherlands Indies in 1911, and, to a greater extent, a result of the influenza epidemic of 1918 and 1919, which took the lives of over one million persons.

The rapid expansion of the population of Java and Madura is a result of the Dutch administration, which put an end to wars, applied modern Western hygienic measures (such as vaccination against smallpox) and developed the economic potentialities so that the island became an important source of agricultural products such as sugar, copra, cinchona, coffee, tea, etc. Not only did the Dutch build up a plantation industry but, through coercion (which in the second half of the 19th century was modified to assistance and guidance), they induced the natives greatly to extend their agricultural industry and enter into world economy.

TABLE 56. NETHERLANDS INDIES: INCREASE OF THE NATIVE POPULATION OF JAVA AND MADURA¹³

YEAR	POPULATION	AVERAGE ANNUAL INCREASE IN THE INTERMEDIATE PERIODS IN %
1815	4,499,250	..
1845	9,374,477	2.48
1860	12,514,262	1.94
1870	16,233,100	2.64
1880	19,540,813	1.87
1885	21,190,626	1.83
1890	23,609,312	2.19
1895	25,370,545	1.45
1900	28,396,121	2.27
1905	29,978,558	1.10
1920	34,428,711	0.93
1930	40,891,093	1.79

Java's Population Problem and Its Solution: The great mass of the increasing population remained dependent upon agriculture and native crafts for its subsistence. In an agrarian economy of the type found in Java, any increase of inhabitants leads to an extension of the soil under cultivation. Now, however, the density has reached such a point that Java is faced by a problem of overpopulation which can no longer be solved by the clearing of forest land because the remaining forests must be protected in order to preserve the water supply of the island. In

¹³ "Colonization and Population of Java," *The Far Eastern Review*, Dec., 1938, p. 462. The figures given by J. van Gelderen in his paper, "The Numerical Evolution of Population with Particular Reference to the Population of Java," *Proceedings of the International Congress for Studies on Population*, Rome, 1931, Vol. I, pp. 275-87, vary slightly from the above figures.

spite of this exhaustion of the possibilities for agricultural expansion, the population continues to increase. The Dutch colonial administration has therefore been forced to find new sources of production in order to prevent a further lowering of the already precarious standard of living of the native population. The economic depression forced the administration to employ measures that might alleviate this condition. Relief was sought in the following ways: first, by applying a combination of economic measures aimed at the betterment of the natives' means of subsistence, including: (a) industrialization by establishing non-agricultural undertakings, based on Western methods, primarily intended to manufacture products previously imported, thus providing employment to the European unemployed and to native skilled labor—of importance to the rural population to the extent that the newly established industries obtain their raw materials from native sources of agriculture or manufacture; (b) industrialization by stimulating native industries through the introduction of improved working methods and the finding of new markets; (c) the increase of the productivity of native agriculture; and (d) (indirectly) an information service for domestic and foreign trade possibilities; and second, by emigration to agricultural colonies.¹⁴

This chapter is concerned only with the second method, emigration and colonization. In recent decades there have been two types of Javanese migration to the Outer Provinces: (1) migration of agricultural laborers to the plantations of the Outer Provinces, especially to the East Coast Province of Sumatra, where 462,400 persons, or 31.4% of the population, have immigrated from Java and Madura; and (2) migration of agricultural colonists to South Sumatra, mainly to the Lampong Districts. In recent years many thousand Javanese laborers have been sent back from the Outer Provinces and it is certain that the plantations offer only a very small outlet for Javanese.

TABLE 57. NETHERLANDS INDIES: JAVANESE COOLIES PRESENT ON JANUARY FIRST ON ESTATES IN THE OUTER PROVINCES¹⁵

PERIOD	MEN		WOMEN		TOTAL
	Number	% of Total	Number	% of Total	Number
1925-29 Average	245,576	72.5	93,360	27.5	338,936
1930-34 Average	232,025	73.7	82,790	26.3	314,815
1935	152,121	74.6	51,842	25.4	203,963
1936	152,181	66.5	76,511	33.5	228,692
1937	164,450	66.3	83,576	33.7	248,026
1938	198,530	66.2	101,589	33.8	300,119

Potentially more important is agricultural colonization. The first colonization experiment was made in 1905, and by 1928 about 3.5 million guilders had been spent for the resettlement of 25,000 Javanese, or 144 guilders per person. In 1932 the government found that the already existing agricultural colonies could offer considerable assistance

¹⁴ "Colonization and Population of Java," *The Far Eastern Review*, Dec. 1938, p. 463.

¹⁵ *Indisch V'ertig.* Includes both free and contract coolies.

in resettlement by employing newcomers during the rice harvest and paying them with a part of the crop. This supplies the new settler with food until he gets the first yield from his own land. In the course of 1937 fully 4,400 families were transferred to the Lampong Districts. The old system of government support of the individual settler would have involved an expenditure of 1,250,000 guilders, while actually less than 200,000 guilders were required for the transfer of these families.¹⁶ The total number of colonists leaving for the Outer Provinces even in recent years has been small compared with the total natural increase of a population of 40 million. The number of migrants amounted to 15,809 in 1935, 16,627 in 1936, 19,307 in 1937, and 33,399 in 1938. It is to be expected that migration will increase in the coming years because the government has decided to encourage agricultural colonization more actively than in the past. The Central Colonization Commission hopes that the number of native emigrants can be increased to 100,000 per year.

TABLE 58. NETHERLANDS INDIES. JAVANESE AGRICULTURAL SETTLERS IN THE OUTER PROVINCES¹⁷

ITEM	1935	1936	1937	1938
Total, January 1	58,934	69,183	80,325	94,178
New arrivals	15,809	16,627	19,307	33,399
Born	1,885 (a)	2,373	3,301	3,722
Departures	5,485	5,304	5,951	3,467
Deceased	2,069	2,554	2,851	3,178
Total, December 31	69,074	80,325	94,131 (a)	124,654 (a)
Area cultivated (hectares)	20,934	18,004	21,556	28,171

(a) Corrected by editor.

¹⁶ "Javanese Colonization in the Outer Provinces." *The Netherlands Indies*, Vol. VI, No. 9, p. 14. See also Maassen, (C.), *De Javaansche Landbouwkolonisatie in de Buitengewesten*, Batavia, 1937.

¹⁷ *Indisch Verslag*, 1939, pp. 52-53. According to information supplied by the Centraal Kantoor voor de Staatsieck, more than two-thirds of the settlers live in the Lampong Districts, and the others in Benkulen, Palembang and the East Coast of Sumatra.

10. AUSTRALIA

Population Growth: Australian population growth has been greatly aided by immigration, but since about 1860 the natural increase has been larger than the gain from immigration.¹

It is difficult, if not impossible, to predict the share immigration will have in the future growth of population, but taking into account the long-term trend of decline in importance, we may expect that Australia will have to rely more and more on natural increase.

Natural increase depends upon birth and death rates and the age composition of the population. After the war the birth rate declined steadily until 1935; in the years 1936, 1937 and 1938 it increased. The death rate has decreased too, but in spite of this the rate of natural increase in 1935 was less than half of what it was in 1922. Table 60 shows the development of these rates year by year.

¹ For a recent discussion of Australia's population and migration questions, see Harris, H. L., *Australia's National Interests and National Policy*, Australian Institute of International Affairs, Melbourne, 1938.

Australia's population has become considerably older (see Table 4). This results partly from improvements in health conditions, which have increased the average expectation of life, but chiefly from the slowing up of population growth, so that an eventual increase in the mortality rate must be expected.

TABLE 59. AUSTRALIA: IMMIGRATION AND POPULATION GROWTH^a

PERIOD	INCREASE OF POPULATION	NET IMMIGRATION	PERCENTAGE OF GROWTH FROM IMMIGRATION
1852-1861	730,000	554,000	76 ✓
1862-1871	533,000	185,000	35
1872-1881	606,000	209,000	34
1882-1891	934,000	361,000	39
1892-1901	584,000	1,000	0.2
1902-1911	749,000	112,000	15
1912-1921	935,000	149,000	16
1922-1931	1,017,000	261,000	26 ✓
1932-1936	234,000	1,000	...

TABLE 60. AUSTRALIA: CRUDE RATES OF BIRTH, DEATH AND NATURAL INCREASE^a

PERIOD	BIRTHS PER 1,000	DEATHS PER 1,000	RATE OF INCREASE PER 1,000
1911-13	28.1	10.8	17.3
1922	24.7	9.2	15.5
1923	23.8	9.9	13.9
1924	23.2	9.5	13.7
1925	22.9	9.2	13.7
1926	22.0	9.4	12.6
1927	21.7	9.5	12.2
1928	21.3	9.5	11.8
1929	20.3	9.6	10.7
1930	19.9	8.6	11.3
1931	18.2	8.7	9.5
1932	16.9	8.7	8.2
1933	16.8	8.9	7.9
1934	16.4	9.3	7.1
1935	16.5	9.5	7.0
1936	17.1	9.4	7.7
1937	17.4	9.4	8.0
1938	17.5	9.6	7.9

Wolstenholme has studied the question of the future growth of the Australian population. Assuming that no further migration takes place and that natality and mortality rates stay at the 1932-34 level (see Table 61, estimate No. 1), he found that a maximum population of 7,875,000 would be reached by 1977; after that year the population would decline in number. Assuming the possibility of resumption of large-scale

^a Burton, H., and Downing, R. I., "Australian Population Problems," *Congrès International de la Population*, Paris, 1937, Vol. III, p. 19.

^b Figures for 1911 to 1935 from *ibid.*, p. 21, for 1936, 1937 and 1938, *Official Year Book of the Commonwealth of Australia*, 1939.

immigration, commencing in 1938, of the same volume (40,000) and age distribution as that which marked the peak pre-depression years (see Table 61, estimate No. 2), he estimated a maximum population of 8,940,000 in 1981, after which year the population would decrease.

TABLE 61. AUSTRALIA: FUTURE MOVEMENTS OF POPULATION⁴
(In thousands)

YEAR	ESTIMATE No. 1	ESTIMATE No. 2
1933	6,630	6,630
1938	6,882	6,882
1943	7,126	7,342
1948	7,353	7,761
1953	7,547	8,122
1958	7,694	8,407
1963	7,788	8,612
1968	7,841	8,755
1973	7,867	8,854
1978	7,873	8,907
1983	7,860	8,909
1988	7,825	8,858
1993	7,770	8,757
1998	7,703	8,621
2003	7,632	8,462

It is doubtful that immigration will again be as large as it was in the post-War decade when a large percentage of the migrants from the British Isles were assisted financially. In the meantime the official attitude toward migration even to the Empire has changed in Great Britain. "We think it sufficient, therefore, at this stage to recommend that the Governments concerned should from now onwards bear constantly in mind the effect of migration on the population of the United Kingdom, and should examine afresh, and with the greatest care, the question whether if the decline in that population [Great Britain] is found to permit, it can be regarded as in the interest of the British Commonwealth as a whole that migration should continue to be encouraged."⁵

TABLE 62. AUSTRALIA: AREA AND POPULATION BY STATES⁶

STATE	AREA Sq. mi.	POPULATION, 1911		POPULATION, 1931		POPULATION, 1933	
		Number	Per sq. mi.	Number	Per sq. mi.	Number	Per sq. mi.
New South Wales	309,432	1,646,734	5.3	2,100,371	6.8	2,600,847	8.4
Victoria	87,884	1,315,551	14.9	1,531,280	17.4	1,820,261	20.7
Queensland	670,500	605,813	0.9	755,972	1.1	947,534	1.4
South Australia	380,070	408,558	1.1	495,160	1.3	580,949	1.5
Western Australia	975,920	282,114	0.3	332,732	0.3	438,852	0.4
Tasmania	26,215	191,211	7.3	213,780	8.2	227,599	8.7
Territories							
Northern	523,620	3,310	0.006	3,667	0.007	4,850	0.009
Federal Capital	940	1,714	1.8	2,572	2.7	8,947	9.5
Australia	2,974,581	4,455,005	1.5	5,435,734	1.8	6,629,839	2.2

⁴ Wolstenholme, S. H., "The Future of the Australian Population," *The Economic Record*, Vol. XII, Dec. 1936, p. 205.

⁵ Report of the Oversea Settlement Board, May 1938, London, 1938, p. 14.

⁶ Official Year Book of the Commonwealth of Australia.

Distribution of Population: Australia's population is very unevenly distributed over the continent, as can be seen from Table 62. Climatic and other factors have led to a very definite concentration of the population in the east and south of Australia, and Griffith Taylor, the geographer, speaks of an "Economic Australia" and an "Empty Australia." Unfortunately, "Empty Australia," i.e., that part of Australia which will never see anything but a sprinkling of ranchers, is the larger of the two divisions, a fact which is very often overlooked by critics of Australia's population policy.⁷

As late as 1924 Griffith Taylor was publicly criticized in the Commonwealth Parliament for drawing attention to "Empty Australia," but by now Australia's politicians are willing to admit that the waterless wastes of the center and west of the continent will not attract even hostile invaders, much less settlers. Very different, however, is the situation in the well-watered part of Queensland, New South Wales, Victoria and South Australia, which are still rather thinly settled and developed only in an extensive exploitative way. Here there would definitely be room for closer settlement if more intensive agricultural methods were employed, and here lies Australia's population problem. ✓

Immigration Policy: Australia's immigration policy is the much-disputed "White Australia policy" which has two aspects: a positive one of attracting economically and socially desirable immigrants, and a negative one of excluding or limiting in number those immigrants considered undesirable. The criterion of desirable and undesirable changes with changing internal conditions. Two considerations form the basis of the White Australia policy—one sociological and one economic. The former is directed against those who are considered incapable of assimilation, which at the start applied to Chinese, later to all Asiatics and, following the Great War, even to people from southern and eastern Europe; so that today to many Australians only British immigrants seem desirable. The economic argument is dictated by the fear that immigration will lower the Australian standard of living and existing wages, a fear which is especially strong among Australian labor unions.⁸ ✓

The Commonwealth Immigration Act, 1901-35, is entirely non-discriminatory and contains no suggestion of racial bias. Immigration is controlled by means of police regulation on the grounds of the defense of social order, and on the basis of the health or economic standing of the applicant, or of economic conditions within the country.⁹

⁷ Taylor, Griffith, "Possibilities of Settlement in Australia" *Limits of Land Settlement*, Bowman Isaiah, ed., New York, 1937, p. 206

⁸ Brunner, F. de S., *Rural Australia and New Zealand* Studies of the Pacific, No. 2, American Council, I.P.R., New York, 1938 p. 10

⁹ For a detailed discussion of the Australian immigration laws see Charteris, A. H., "Australian Immigration Laws and Their Working," *The Legal Status of Aliens in Pacific Countries*, Mackenzie, Norman, ed., New York, 1937

11. NEW ZEALAND

Population Growth: At the beginning of the 19th century there was a fluctuating white population of perhaps 100 souls in New Zealand. Since that time the white population has grown steadily until, in 1936, it reached 1,491,500.

As in all countries in the pioneering stage, migration was more important than natural increase for the growth of New Zealand's population until the late seventies of the 19th century. As the population grew, however, natural increase became relatively more important.

TABLE 63. NEW ZEALAND: EXCESS OF BIRTHS OVER DEATHS AND OF ARRIVALS OVER DEPARTURES¹

PERIOD	NATURAL INCREASE	MIGRATIONAL INCREASE
1861-65	16,610	93,169
1866-70	33,442	20,536
1871-75	40,538	81,946
1876-80	62,951	54,787
1881-85	67,408	28,959
1886-90	64,325	- 8,702
1891-95	57,885	15,320
1896-1900	59,534	10,638
1900-05	68,738	45,446
1906-10	81,748	40,966
1911-15	89,005	35,561
1916-20	76,607	14,854
1921-25	86,744	49,988
1926-30	77,342	24,627
1931-35	63,952	- 9,918
1936	11,781	727
1937	12,357	2,381

TABLE 64. NEW ZEALAND: GROWTH OF POPULATION²

YEAR OF CENSUS	POPULATION EXCLUDING MAORIS	INCREASE	PERCENTAGE OF INCREASE	AVERAGE ANNUAL PERCENTAGE INCREASE
1886	576,524	86,591	17.67	3.32
1891	624,474	47,950	8.32	1.60
1896	701,101	76,627	12.27	2.33
1901	770,312	69,211	9.87	1.91
1906	886,000	115,688	15.02	2.79
1911	1,005,589	119,589	13.50	2.60
1916	1,096,228	90,639	9.01	1.57
1921	1,214,677	118,449	10.81	2.31
1926	1,344,469	129,792	10.69	2.05
1936	1,491,484	147,015	10.93	1.05

The outstanding historical developments which contributed to large increases in population were, first, in the forties, the extensive activities of colonizing companies and societies, such as the New Zealand Company; second, in the sixties, the gold rushes; and third, in the seventies, the elaborate schemes of the Minister of Works, Sir Julius Vogel, to develop public works and assist immigration.³

¹ *New Zealand Official Year-Book*, 1939, p. 54.

² *New Zealand Official Year-Book*, 1938.

³ *Contemporary New Zealand, A Survey of Domestic and Foreign Policy*, New Zealand Institute of International Affairs, 1938, p. 25.

Years of depression led to a stagnation of immigration or even to a reverse movement, as in the years 1886-90 and 1931-35 when New Zealand lost 8,702 and 9,918 people respectively through emigration.

In the last decades there has been a decline in the rate of population increase, the decline becoming quite rapid in recent years. New Zealand is facing a stationary or even diminishing population unless the trend should change considerably. The rate of natural increase, which was as high as 29.41 per 1,000 in 1876-80, dropped to 7.9 per 1,000 in 1936 and rose slightly to 8.2 in 1937. Calculations of the net reproduction rate according to Kuczynski's method reveal that the rate of reproduction had declined by 1936 to such an extent that it was insufficient to maintain the population at its 1936 level.

Composition of Population: New Zealand is the most British of all Dominions, because of its racial and national homogeneity. Persons of British origin account for 92.98% of the white population.⁴ Among the New Zealanders born in foreign countries, the Yugoslavians form the largest community. In 1936 they numbered 2,706, or 0.18% of the population.⁵ Most of these came in the late years of the last century as workers in the kauri gum-fields north of Auckland.

According to the 1936 census, the population of New Zealand included the following groups: European, 1,473,020 (93.60%); European-Maori—three quarters European, 11,508 (0.73%), one half European, 14,891 (0.95%) and one quarter European, 11,397 (0.72%)—or a total of 37,796 (2.40%); pure Maori, 55,915 (3.55%); Chinese, 2,579 (0.16%); and others, 4,500 (0.29%).⁶ Persons three fourths Maori and one fourth European, or one half Maori and one half European, are classified as "Maori," while those with only one quarter Maori blood are listed as "Europeans." During the 19th century the Maori population declined continuously to below 40,000. In the 20th century this trend was reversed and in 1936 the Maori population amounted to some 82,000 (or 5.23% of the total population), the majority of whom lived in the North Island. It is worthy of note that only approximately 50% of the Maoris are of pure Maori descent and that the growth of the Maori population is accompanied by an increasing degree of racial dilution through intermarriage.

Immigration Policy: The racial and national homogeneity of New Zealand today is the result of immigration policy and legislation. The directors of the New Zealand Company stated in 1840: "Its object is to transplant English society, with its various gradations in due proportions, carrying out our laws, customs, associations, habits, manners, feelings—everything of England, in short, but the soil."⁷

New Zealand has managed to preserve the British character desired by the directors of the New Zealand Company through discriminatory legislation embodied in the Immigration Restriction Act of 1899, the Immigration Act of 1908 and its amendments, and the Undesirable Immigrants Exclusion Act of 1919.

⁴ Census 1936.

⁵ *New Zealand Monthly Abstract of Statistics*, Dec. 22, 1937.

⁶ *New Zealand Official Year-Book*.

⁷ Quoted by Scholtenfeld, G. H., in *New Zealand Affairs*, Christchurch, 1929, p. 47.

The agitation for restriction of immigration was originally directed against Chinese immigrants and began in the 1870's. In 1881 the first restriction bill was passed; it imposed a poll tax of £10 on each Chinese entering, and limited the number of Chinese brought to New Zealand in any ship to one for every ten tons of tonnage. The Chinese Immigrants Act of 1888 amended the Act of 1881 by limiting the number of Chinese passengers to one for every hundred tons. The Chinese Immigrants Amendment Bill of 1896 restricted the number of Chinese passengers to one per two hundred tons and increased the poll tax to £100.

The Immigration Restriction Act was passed in 1899 and put into force on August 8, 1900. This act defines undesirable immigrants (e.g., illiterate, insane, criminal); it does not apply a color bar but relies on a quasi-education test which, however, is not applicable to persons of British parentage. The act does not apply to Chinese, who remain subject to the Chinese Immigration Act.

The whole existing immigration law was consolidated in the Immigration Restriction Act of 1908. This act, its amendments and the Undesirable Immigrants Exclusion Act of 1919 regulate immigration into New Zealand. All immigrants, except persons of British birth or parentage, are required to secure entry permits from the customs, which administers the immigration law. Persons are not of British birth or parentage merely because they are naturalized or their parents are naturalized, or because they are aboriginal natives of any Dominion other than New Zealand or of any colony, possession or protectorate. The decision as to desirability and undesirability is left to the discretion of

TABLE 65 NEW ZEALAND IMMIGRATION AND EMIGRATION^a*Number of Immigrant Arrivals*

Stocks	1910 14 AVERAGE	1925 29 AVERAGE	1930 34 AVERAGE	1935	1936	1937	1938
RACE ALIENS (2)							
Chinese	388	519	324	273	309	343	473
Indian	197	202	132	130	158	178	172
Others	94	209	183	140	283	298	379
Total, including Aliens	40,810	39,225	24,174	24,901	26,936	31,670	38,738

Number of Emigrant Departures

Stocks	1910 14 AVERAGE	1925 29 AVERAGE	1930 34 AVERAGE	1935	1936	1937	1938
RACE ALIENS (a)							
Chinese	537 (b)	573	443	228	218	218	265
Indian	74 (c)	149	134	104	109	111	171
Others	3 (c)	245	179	153	256	258	317
Total, including Aliens	33,631	33,185	24,296	28,051	28,050	32,023	36,352

(a) "Race Alien" as used in connection with these statistics, is "a person of other than European Race." The principal race aliens with whom New Zealand is concerned are Chinese, Indians and Syrians.

(b) 1914 only.

(c) Not an average. Records of departures in these categories have been kept only since July 1914.

^a New Zealand Official Year-Book

the Minister of Customs, who is led by such considerations as maintaining racial purity, safeguarding the standard of living, etc.

12. CANADA

Growth and Racial Composition of Population: Volume I of the *Seventh Census of Canada, 1931*, contains an excellent study on the growth of population in that country.

TABLE 66. CANADA: GROWTH OF POPULATION, 1851-1931¹

YEAR	POPULATION	DENSITY PER SQ. MI.	PERCENTAGE INCREASE IN THE PREVIOUS DECADE
1851	2,436,297	0.70	...
1861	3,229,633	0.93	32.56
1871	3,689,257	1.06	14.23
1881	4,324,810	1.25	17.23
1891	4,833,239	1.39	11.76
1901	5,371,315	1.55	11.13
1911	7,206,643	2.08	34.17
1921	8,787,949	2.53	21.94
1931	10,376,786	2.99	18.08

This growth went hand in hand with the spread of population from east to west. In the period 1851-81 the increase resulted from the settlement of the older areas, bringing them up to a fair degree of density. There was little settlement of the newer eastern areas and only a small overflow to the west. At the same time there was a slowing up of the population growth; this was the result in part of the lowering of the rate of natural increase but principally of emigration to the United States. The years 1881-1901 saw a heavy outward movement from the settlement areas toward the west and also one from Canada as a whole, while the rate of increase fell still further. The decade 1901-11 brought the greatest absolute increase in Canada's history. This increase included 890,000 from immigration. The following two decades once more saw a decrease in the growth of population. With the beginning of the present century, agricultural settlement in the prairie provinces rose rapidly, and a period of large transcontinental railway construction began—the Canadian Northern Railway System and the National Transcontinental-Grand Trunk Pacific Systems. "The agricultural settlement of this period was peculiar in that it was settlement of a grassland area of which there had been no counterpart in Canadian history. The ease of settlement contributed enormously to its rapidity, and the movement attained a volume that could not be hoped for under different circumstances. Under the stimulating effects of rapid agricultural settlement and active railway construction, immigration rose rapidly to an average of over 200,000 a year and to a peak of 402,000 in the year 1913."²

It is interesting to note that the population increase from immigration in the 80 years between 1851 and 1931 was 1,844,000, and that this is

¹ *Seventh Census of Canada, 1931*, Vol. I.

² Mackintosh, W. A., "Canada as an Area for Settlement," *Limits of Land Settlement*, Bowman, Isaiah, ed., New York, 1937, pp. 58-61.

approximately balanced in number by the loss of Canadians to the United States, which amounted to 1,740,000 in the same period.

"As everyone knows, the Canadian people is not a compact, racial or linguistic or religious community. It is rather a collection of racial, linguistic, and religious groups which has not yet become amalgamated into a homogeneous nation."³ According to the census of 1931, the Canadian people were classified as to racial origins in the following proportions:⁴ British (English, Scotch, Irish, Welsh, etc.) 51.86%; French 28.22%; Non-British, Non-French 19.93%.

TABLE 67. CANADA: RACIAL COMPOSITION OF POPULATION
ACCORDING TO THE CENSUSES OF 1881, 1901, 1911, 1921 AND 1931⁵
(Percentages of total)

ORIGIN	1881	1901	1911	1921	1931
British					
English	20.38	23.47	25.30	28.96	26.42
Irish	22.14	18.41	14.58	12.61	11.86
Scotch	16.18	14.90	13.85	13.35	12.97
Other	0.23	0.25	0.35	0.48	0.60
Total	58.93	57.03	54.08	55.40	51.85
French	30.03	30.71	28.51	27.91	28.22
German	5.88	5.78	5.46	3.35	4.56
Scandinavian	0.12	0.58	1.49	1.90	2.20
Ukrainian	...	0.11	1.04	1.21	2.17
Other European	0.79	1.98	4.73	7.52	8.55
Chinese and Japanese	0.10	0.41	0.52	0.63	0.67
Negro	0.49	0.32	0.23	0.21	0.19
Indian and Eskimo	2.51	2.38	1.46	1.29	1.24
Various	1.15	0.70	2.48	0.58	0.35
Total	41.07	42.97	45.92	44.60	48.15
Grand Total	100.00	100.00	100.00	100.00	100.00

Table 67 shows that the British element of the Canadian population has been steadily receding, the decline being especially pronounced since 1921. The French community, although declining prior to 1921, has been improving its position since the World War because of its high birth rate. The foreign elements have been steadily increasing at the expense of the two main sections of the population, but particularly the British. This increase has been especially rapid among peoples originating in central, eastern and southern Europe, the number of Hungarians, Slavs, Italians and Greeks having increased about 91.3% in the decade from 1921 to 1931.⁶ Perhaps the most significant continental European group is the Ukrainian, not because of its numbers, but rather because of its failure to assimilate with either the British or the French sections. Ukrainians tend to live in solid racial blocs. By 1931, there

³ MacKay, R. A., and Rogers, E. B., *Canada Looks Abroad*, Toronto, 1938, p. 50.

⁴ *The Canada Year Book*, 1936, p. 113.

⁵ *The Canada Year Book*, 1934-35, p. 123.

⁶ *Ibid.*, p. 122.

were some 193,000 of them in the prairie provinces, residing in compact communities.

Professor W. B. Hurd, outstanding authority on Canada's population problems, has estimated the future growth of the Canadian population, treating the British, the French, and the non-British-non-French sections of the population separately.

TABLE 68. CANADA: THE FUTURE GROWTH OF VARIOUS RACIAL GROUPS⁷
(In thousands)

YEAR	BRITISH ORIGIN	FRENCH ORIGIN	ORIGIN OTHER THAN BRITISH OR FRENCH	TOTAL
1931	5,379	2,928	2,067	10,373
1941	5,767	3,594	2,410	11,771
1951	6,166	4,472	2,822	13,460
1961	6,383	5,447	3,203	15,033
1971	6,471	6,586	3,585	16,642

TABLE 69. CANADA: FUTURE GROWTH OF VARIOUS RACIAL GROUPS IN PERCENTAGES OF TOTAL POPULATION⁸

YEAR	BRITISH ORIGIN	FRENCH ORIGIN	ORIGIN OTHER THAN BRITISH OR FRENCH	TOTAL
1931	51.9	28.2	19.9	100.0
1941	49.0	30.5	20.5	100.0
1951	45.8	33.2	21.0	100.0
1961	42.5	36.2	21.3	100.0
1971	38.9	39.6	21.5	100.0

Hurd points out that these figures may, of course, be altered by a variety of factors. Immigration of non-British stock may substantially increase the proportion of non-British-non-French stock, and, if past experience is any guide, do so largely at the expense of the British stock.

Immigration and Immigration Policy: There is a very close correlation between prosperity and increased immigration on the one hand, and periods of depression and a falling off in immigration on the other. For reasons stated above, the first 14 years of the present century saw a record immigration. During the War years immigration fell to low levels and was confined very largely to persons coming from the United States. In the decade after the War there was a substantial recovery, but immigration has never approached the pre-War level. During the depression it fell off very heavily. It is worthy of note that none of the previous depressions reduced immigration as much as the last one, "an evidence that the depression through which we have passed has been greater in extent and in intensity than any previously encountered by

⁷ Estimates are made on the basis of the age distribution of 1931, the birth rates of 1930-31-32, and Life Tables of 1932.

⁸ The Quebec Life Table was used for the French, the Ontario for the British, and All-Canada for the "others." The total for all three was then adjusted proportionately to the total for all races obtained from the All-Canada Life Table. The adjustment was small for all years—only about 2% for 1971 and less for the preceding years. Hurd, W. B., "The Decline of the Anglo-Saxons in Canada" (unpublished manuscript), as quoted in Mackay and Rogers, *op. cit.*, p. 57.

this country. In the main agricultural region it has been greatly intensified by persistent drought"⁹

TABLE 70. CANADA: IMMIGRATION FROM VARIOUS COUNTRIES, 1891-1938¹⁰

YEARS	UNITED KINGDOM	UNITED STATES	OTHER COUNTRIES	TOTAL
1910-14 Average	121,887	97,694	89,466	309,047
1925-29 Average	51,954	24,853	65,503	142,310
1930-34 Average	9,437	13,821	12,699	35,957
1935	2,103	5,291	3,883	11,277
1936	2,197	4,876	4,570	11,643
1937	2,859	5,555	6,687	15,101
1938	3,389	5,833	8,022	17,244

In 1885 Canada passed its first law affecting Chinese immigration by leveling a poll tax of \$50 on each entering Chinese. In 1901 this tax was increased to \$100, in 1904 to \$500. The Chinese Immigration Act of 1923 limits the entry into Canada of persons of Chinese origin or descent to government representatives, children born in Canada of parents of Chinese origin or descent, merchants and students.

Table 70 sets forth the average annual size of immigration for the various periods since 1910.

Japanese immigration to Canada began about 1896, and a total of about 12,000 came in the years between 1896 and 1900. In 1908 Japan volunteered to restrict emigration from Japan by limiting the number of passports issued to Japanese migrating to Canada to the following classes: first, prior residents in Canada and their wives and children; second, those specially engaged by Japanese residents in Canada for *bona fide* personal and domestic service; third, contract emigrants whose terms of contract, work to be done, and names and standing of intended employers were satisfactorily specified; and, fourth, agricultural laborers brought in by Japanese agricultural holders in Canada. The number of domestic and agricultural laborers was limited to 400 annually. In 1923 the Gentlemen's Agreement of 1908 was modified, and the maximum of 400 agricultural and domestic Japanese laborers was reduced to 150, with no restrictions on prior residents or on wives and children already in the country. The average number of males admitted annually between March 31, 1922, and March 31, 1928, was 147, as compared with an annual average for all Japanese immigrants of 449 for the same years. In 1928 Canada succeeded in getting an additional modification of the Gentlemen's Agreement; now the technical control of Japanese immigration into Canada lies in the hands of the Canadian representative in Tokyo, and Japan has undertaken to restrict the number of migrants to 150 persons annually and has given assurance that steps would be taken to end the practice of Japanese-Canadians' sending for so-called "picture-brides."¹¹

⁹ Mackintosh, *op. cit.*, p. 67.

¹⁰ *The Canada Year Book*, 1939, p. 157. The figures given in *The Canada Year Book* up to the 1936 edition differ from those given in the last three editions as the former are based on the fiscal year, the latter on the calendar year.

¹¹ The paragraph on Japanese immigration is based on Young, Charles H., Reid, R. Y., and Carrothers, W. A., *The Japanese Canadians*, Toronto, 1938, Chapter I, especially pp. 11-18.

The immigration of East Indians, controlled by a regulation of the Immigration Act of 1910, has been very small in recent years.

TABLE 71. CANADA: ORIENTAL IMMIGRATION, 1929-37¹²

CALENDAR YEAR	CHINESE	JAPANESE	EAST INDIAN	TOTAL
1929	1	180	49	230
1930	0	218	80	298
1931	0	174	52	226
1932	1	119	61	181
1933	1	106	36	143
1934	1	126	33	160
1935	0	70	26	96
1936	0	103	13	116
1937	1	146	11	158

In discussing the Canadian immigration policy in regard to European stock, Mackintosh says: "Canadian immigration policy before the war was aggressive and positive. The desirability of the country for settlement was widely and continuously advertised in the United States and Europe. Steamship and railway companies vied with each other in offering cheap transportation and in some periods in earning government bonuses for bringing in settlers. After the war different conditions called forth different policies. There had been much questioning of the desirability of induced and assisted immigration. The occupation of the whole of the open prairie made the problems of settlement more difficult and called for more assistance on the part of the government or more capital on the part of the immigrant. On the other hand, hopes of a new era in many countries and more generous provision of social assistance reduced some of the incentives to immigration.

"Until 1930 assistance was given jointly by the British and Canadian governments to agricultural farm workers and domestic servants from Great Britain, and under the so-called 3,000-family scheme the British government advanced money to equip families for farm settlement. No government assistance was given to immigrants from the continent of Europe, and, in general, immigrants who were assisted by their own governments were discouraged. Industrial workers were excluded, but agricultural and domestic workers were accepted.

"Greater encouragement was given to immigrants from northern than from southern Europe, and Canadian medical and civil officers were stationed at Paris, Antwerp, Rotterdam, Hamburg, Danzig, and Riga. The active encouragement of immigration was left mainly to the two great railway systems both of which were interested in the increased traffic that increased agricultural population would bring, and both were also owners of agricultural lands.

"In 1930 immigration of all except dependents of heads of families already established in Canada was suspended and up to the present [1937] has not been revived. Opposition to immigration has, in general, however, been based wholly on the degree of industrial and agricultural depression. Aside from the interests of specific groups, it has been

¹² *The Canada Year Book*, 1939, p. 159.

generally appreciated that in a period of contracting employment and occupational opportunities the task of adjustment confronting the immigrant is too great both for him and for the community to which he comes. Adjustments that are easily accomplished in periods of expansion are difficult or impossible in the face of contraction."¹³

¹³ Mackintosh, *op. cit.*, pp. 80-81. See also England, Robert, *The Colonization of Western Canada: A Study of Contemporary Land Settlement, 1886-1934*, London, 1936.

13. UNITED STATES

A recent report of the National Resources Committee provides most valuable documentation¹ of the various phases of the population problem of the United States and has been used as a basis for the following discussion.

Trend of the National Population: The era of population expansion in the United States has apparently come to an end and the country is slowly approaching a period of stationary or of decreasing population. Crude rates of natural increase indicate this slowing down of the growth, and more refined statistical methods clearly confirm this tendency.

The most recent estimates of the future population, prepared for the Committee by Thompson and Whelpton,² are based on three sets of assumptions for birth rates, death rates and immigration: (1) medium mortality, low fertility, no immigration; (2) medium mortality, medium fertility, no immigration; (3) medium mortality, medium fertility, and a net immigration of 100,000 annually after 1940. Using hypothesis 1, a population maximum of 139,457,000 would be reached in 1960, after which the population would decrease. According to hypothesis 2, the population would continue to grow at a constantly decreasing rate, and a peak of 153,000,000 would be reached in 1980. With hypothesis 3, the population would reach a maximum of 158,335,000 in 1980.

TABLE 72. UNITED STATES: POPULATION, AMOUNT OF INCREASE AND PER CENT OF INCREASE³

YEAR	POPULATION (Thousands)	INCREASE (Thousands)	DECENNIAL PERCENTAGE OF INCREASE
1890	63,056	..	...
1900	76,129	13,073	20.7
1910	92,267	16,138	21.2
1920	107,190	14,923	16.2
1930	123,091	15,901	14.8
1935 (a)	127,521 (a)	4,430 (a)	7.2 (a)

(a) 5-year interval.

Population Distribution: The four main forces that influence the distribution of population of the United States are immigration, birth, death and internal migration. The first of these forces brought people

¹ *The Problems of a Changing Population*, Report of the Committee on Population Problems to the National Resources Committee, May 1938. See also "The American People: Studies in Population," *The Annals of the American Academy of Political and Social Science*, Vol. 188, November 1936.

² Thompson, W. S., and Whelpton P. K., of the Scripps Foundation for Research in Population Problems.

³ *The Problems of a Changing Population*, p. 21. The population figures are midyear estimates. For that reason the figure for 1930 differs from the census, which reports 122,775,000. According to Depr. of Commerce, Bureau of the Census, *Summary of Preliminary Population Figures for the United States—1940*, the total population on April 1, 1940, was 131,409,881, the increase between the 1930 and 1940 censuses was 8,634,835, and the per cent of increase in that period was 7.0%.

to points along the whole Atlantic seaboard and then to areas of expanding industrial opportunity, notably in the Northeast, with areas of secondary concentration in other sections of the country (for example, the Middle States and Far West). Differences in the rate of natural increase of the population of various regions and communities have tended toward accumulations of population in the most rural sections of the country. The differential natural increase is a very active force in contrast to immigration, which is now relatively unimportant. ✓

Internal migration is the factor which constantly modifies the agglomeration of people that would otherwise be a consequence of immigration or of differential natural increase. Two main movements have predominated: (1) the movement to new lands, mines and jobs in the West—across the Allegheny Mountains into the valleys of the Ohio and Mississippi, across the prairies to the Pacific coast and, last, to the dry-farming belt on the Great Plains; (2) the movement to industrial and commercial communities in various parts of the nation, but especially to the Middle Atlantic States, southern New England, the Great Lakes and sections of the Pacific Coast.

TABLE 73. CONTINENTAL UNITED STATES: REGIONAL DISTRIBUTION OF THE POPULATION, 1910-1940⁴

REGIONS	1910	1920	1930	1940
New England	6,552,681 7.1%	7,400,909 7.0%	8,166,341 6.7%	8,426,566 6.4%
Middle Atlantic	19,315,892 21.0%	22,261,144 21.1%	26,260,750 21.4%	27,419,893 20.9%
East North Central	18,250,621 19.8%	21,475,543 20.3%	25,297,185 20.6%	26,550,823 20.2%
West North Central	11,637,921 12.7%	12,544,249 11.9%	13,296,915 10.8%	13,490,492 10.3%
South Atlantic	12,194,895 13.3%	13,990,272 13.2%	15,793,589 12.9%	17,771,099 13.5%
East South Central	8,409,901 9.1%	8,893,307 8.4%	9,887,214 8.1%	10,762,967 8.2%
West South Central	8,784,534 9.6%	10,242,224 9.7%	12,176,830 9.9%	13,052,218 9.9%
Mountain	2,633,517 2.9%	3,336,101 3.2%	3,701,789 3.0%	4,128,042 3.1%
Pacific	4,192,304 4.6%	5,566,871 5.3%	8,194,433 6.7%	9,682,781 7.4%
Total of State Figures	...	..	..	131,284,881
Allowance for supplementals not distributed by States	...	...	...	125,000
Continental United States	91,972,266	105,710,620	122,775,046	131,409,881

⁴ Statistical Abstract of the United States for 1910, 1920 and 1930, Summary of Preliminary Figures. for 1940. Percentages for 1940 are taken over total of state figures. All 1940 figures are preliminary.

In recent decades the dominant characteristics of internal migration have been the movement from farms to cities and an opposite one from cities to farms, villages and small towns. A special feature is the migration of negroes from the rural areas of the South to the industrial centers of the North. Before the Civil War 92% of the total negro population of the country lived in the South whereas, in 1930, 20% were found in the North.

The serious drought⁵ and wind erosion that affected large sections of the Great Plains states caused a great migration of drought refugees westward to California, Oregon, Washington and Idaho. To escape these drought and erosion conditions, more than 200,000 persons must have left the Great Plains region in the years 1930-37. The drought refugees who moved into California came largely from the states of the "dust bowl" (Oklahoma, Texas and Kansas) while those who moved to the Pacific Northwest came principally from the north, the area of greatest drought intensity (Montana and the Dakotas).⁶

The Great Plains is not the only region that suffers from the results of soil and wind erosion. In many parts of the country mismanagement of the land has caused loss of the topsoil, soil depletion and severe erosion so that considerable changes in the distribution of the population have to be made as poor farm areas are turned over to forest use or to a pastoral economy.

Among the Western states California has attracted the greatest number of native-born Americans. "The greatest single movement in the entire history of the country, one of the greatest of the world, has been the migration to California in the last decade [1920-30]."⁷ That this movement has not yet come to an end is shown in the above discussion of the drought migration of the present decade.

Racial Composition of the Population: The census of 1930 shows that the population of the United States—exclusive of outlying territories and possessions—is nearly 90% white and almost 10% negro, while all other racial groups (including Mexicans, Indians, Chinese, Japanese, Filipinos and a few others) amount to only 1.7% of the total. The Mexicans, defined as a separate race for the first time by the census of 1930, include all individuals who were born in Mexico, or whose parents were born there, and are not definitely white, negro, Indian, Chinese or Japanese.

It is a common belief that the negro population increases more rapidly than the white but actually, since the date of the first census in 1790, the negro population has increased only about one-half to two-thirds as fast as the white population. In 1790 the negroes represented one-fifth of the population and in 1930 one-tenth. Very important is the fact that negro women in the North are only two-thirds as fertile as

⁵ Rainfall on the Great Plains was subnormal in 1930, 1931, 1933, 1934 and 1936. The years 1934 and 1936 were years of intense drought. See Cronin, Francis D., and Beers, Howard W., *Areas of Intense Drought Distress*, WPA Research Bulletin, Series V, No. 1, Washington, 1937, and Jacoby, Conrad, and Taylor, Carl C., *The People of the Drought States*, WPA Research Bulletin, Series V, No. 2, Washington, 1937.

⁶ *Migration of Workers*, Preliminary Report of the Secretary of Labor, Washington, 1938, Vol. I, Chapter VI. See also Webb, John N., and Brown, Malcolm, *Migrant Landless*, WPA Research Monograph XVIII, Washington, 1938, and Lavelle, C. F. and Taeuber, C., *Rural Migration in the United States*, WPA Research Monograph XIX, Washington, 1939.

⁷ Thornthwaite, C. Warren, *Internal Migration in the United States*, Philadelphia, 1934, p. 18.

those in the South, which would lead to a decrease of the negro population of the North provided no further migration from the South took place.

TABLE 74. CONTINENTAL UNITED STATES: RACIAL COMPOSITION OF THE POPULATION*

RACE	1910	%	1920	%	1930	%
White	81,731,957	88.9	94,820,915	89.7	108,864,207	88.7
Negro	9,827,763	10.7	10,463,131	9.90	11,891,143	9.7
Mexican (a)	...	..	...	...	1,422,533	1.2
Indian	265,683	0.3	244,437	0.2	332,397	0.3
Chinese	71,531	0.1	61,639	0.1	74,954	0.1
Japanese	72,157	0.1	111,010	0.1	138,834	0.1
All other (b)	3,175	..	9,488	...	50,978	...

(a) Included in Whites until 1930

(b) Includes Filipinos, Hindus, Koreans, Hawaiians, Malays, Siamese, Samoans and Maoris.

Immigration: The recent trend of diminishing immigration into the United States is shown in the first column of Table 75. This shows an excess of immigrants over emigrants through 1931, an excess of emigrants for 1932 to 1935 and, in 1936, 1937 and 1938, once more an excess of immigrants. The same table also shows the trend and distribution of immigration by regions and countries. Practically all immigrants come from Europe and the Western Hemisphere. ✓

TABLE 75. UNITED STATES: NET IMMIGRATION FROM OR NET EMIGRATION TO VARIOUS REGIONS, 1910-1938*

PERIOD	ALL COUNTRIES INCLUDING OTHERS	EUROPE	LATIN AMERICA (CANADA AND NEWFOUNDLAND)	AUSTRALIA AND NEW ZEALAND	CHINA	JAPAN
1910-1914 Total	3,731,809	3,348,132	276,754	2,487	- 2,357	19,872
Annual Average	746,362	669,626	55,351	497	- 471	1,974
1920-1924 Total	1,881,616	1,028,684	802,947	3,654	- 246	20,620
Annual Average	376,323	205,737	160,589	731	- 49	4,124
1925-1929 Total	1,131,164	494,435	643,926	693	- 10,645	- 2,234
Annual Average	226,233	98,887	128,785	139	- 2,129	- 447
1930-1934 Total	91,263	73,428	28,984	1,004	- 12,329	- 2,286
Annual Average	18,253	14,686	5,797	201	- 2,466	- 457
1930	191,059	117,900	72,331	668	- 1,882	- 198
1931	35,257	28,774	6,873	393	- 2,225	- 46
1932	67,719	31,522	- 33,207	56	- 2,634	- 287
1933	- 57,013	- 35,308	- 16,483	- 82	- 3,403	- 999
1934	- 10,301	- 6,416	- 830	- 31	- 2,185	- 756
1935	- 3,878(a)	- 2,464	- 347	- 63	- 1,802	- 693
1936	512	3,813	1,377	- 7	- 1,375	- 760
1937	23,508	17,605	9,548	- 29	- 1,511	- 631
1938	42,685	31,310	12,391	101	- 59	- 633

(a) This net emigration which does not appear in the figures by regions is the result of a transfer of population from the United States to the Philippines, not considered as emigration prior to May 1, 1934

Table 76 gives the number of foreign-born residents from Pacific countries who were living in the United States in 1910, 1920 and 1930. The growth of the Mexican population is remarkable.

* Statistical Abstract of the United States

† Figures for the years 1910-1929 are from the *Economic Handbook of the Pacific Area*, while later figures are quoted from the *Statistical Abstract of the United States*

Immigration Policy: The period of federal control over immigration began in 1882 when Congress passed the first law of limiting character and introduced a federal head tax to cover the expense of supervising the entry of aliens. The law of 1882 provided for the rejection of foreign convicts (except those held guilty of political offenses), lunatics, idiots and persons likely to become public charges. After 1882 practically every new law added to the classes of those ineligible for admission or to the causes for deportation. For example, the Act of February 26, 1885, known as the Alien Contract Labor Law, forbade the immigration of aliens under contract of labor. A literacy test was incorporated in the immigration law of February 5, 1917, directed against immigrants from southern and eastern Europe.

TABLE 76. UNITED STATES: RESIDENTS, IN 1910, 1920 AND 1930, BORN IN PACIFIC COUNTRIES¹⁰

CLASSIFICATION	1910	1920	1930
Canadians	1,204,637	1,124,925	1,286,389
Mexicans	221,915	486,418	641,462
Central and South Americans	9,964	23,463	44,137
Pacific Islands (a)	2,415	3,712	4,527
Australians (a)	9,035	10,914	12,816
Japanese	67,744	81,502	70,993
Chinese	56,756	43,560	46,129
Filipinos	...	...	56,083 (b)
Russians (c)	1,184,412	1,400,489	1,153,624

(a) *Fifteenth Census of the United States, 1930, Population*, Vol. II, p. 233.

(b) Lasker, Bruno, *Filipino Immigration*, p. 349.

(c) Figure for 1910 includes people from Estonia, Latvia and Lithuania, figure for 1920 includes persons from Estonia and Latvia.

Most important of all are the so-called quota laws, which combine the principle of qualitative selection with quantitative restriction. The first quota act was in force from June 3, 1921, to June 30, 1924. This law limited the number of immigrants admissible from any nationality not previously excluded (such as Chinese, Hindus, etc.) to 3% of the foreign-born residents of that nationality in the United States in 1910. The object of this measure was to discourage immigration of aliens from those countries of southern and eastern Europe which, prior to 1910, had not yet sent migrants to the United States. The quota law of 1921 permitted the admission of only 357,803 persons in any one year.

The Immigration Law of May 26, 1924, superseded that of 1921 and, together with the basic immigration law of 1917, it controls and regulates today's immigration into the United States. The total number of persons eligible for admission in any one year was reduced to 164,667, because the census figures of foreign-born persons in 1890 were used as a basis for computation and the percentage was reduced from 3 to 2.

Since July 1, 1929, the "national origins" quota has been in use. The formula of the national origins plan is as follows: the annual quota

¹⁰ *Statistical Abstract of the United States*.

of any nationality for the fiscal year shall be a number which bears the same ratio to 150,000 as the number of inhabitants in continental United States in 1920 having that national origin bore to the total number of inhabitants in 1920; but the minimum quota of any nationality shall be 100. This restriction, however, does not apply to Canada, Mexico, Cuba, Haiti, the countries of Central and South America or United States dependencies.

An executive order of September 1930 instructed consular officers to take into account depression conditions in the application of the clause excluding persons likely to become public charges. As a result of this policy, the number of aliens admitted to the United States during the years 1931-32 to 1934-35 were actually less than the number of aliens departing. In the three following years there was a small net immigration, in large part the result of political and racial persecution in Europe.

Immigration Policy with regard to Asiatics: Opposition to Chinese immigrants originated in California. In 1882 Congress passed a law suspending the entry of Chinese laborers for ten years, after which the suspension was extended for another ten years. The law of April 29, 1902, amended on April 27, 1904, indefinitely prohibited the immigration of Chinese laborers. This law, in combination with a section of the law of May 26, 1924, controls immigration from China, which has been very limited ever since.

The only Chinese admitted permanently are returning residents, ministers, professors together with their wives and children, and the Chinese wives of American citizens, provided the marriage took place before July 1, 1924. Government officials and their families, attendants and servants, merchants, tourists and students may enter temporarily.

Also excluded from the United States are Japanese, Koreans, Hindus, etc. Filipinos will be prevented from immigrating after 1946, when the Philippine Islands become independent.

Discriminating measures against Japanese were taken in California especially. The "Gentlemen's Agreement" of 1908 between the United States and Japan regulated the immigration of Japanese. Japan undertook not to issue passports to continental United States to laborers, except to those who had previously lived in the United States and to parents, wives and children (under twenty years of age) of such persons. In 1920 the Japanese Government voluntarily stopped the issue of passports to "picture-brides." The 1924 law, by unilateral action, included Japanese among those prohibited from entry because of their ineligibility to become American citizens. Since 1924 Japanese have been treated the same way as Chinese and their immigration has been very limited.

Since the early days of immigration the people of the United States have considered the latest arrivals as the least desirable. Fear of the immigrant as a competitor on the labor market is the chief factor in the opposition to immigration.

CHAPTER II

Land Utilization and Land Tenure

A. INTRODUCTION

There are two main types of relationship between man and land. One is land utilization, land as a direct supplier of human needs, furnishing raw materials, food, shelter and standing room. The other is land tenure, the relations established among men to determine their varying rights in the use of land.¹

It is not possible to make an adequate study of land utilization without taking into consideration land tenure, nor can land tenure be studied apart from land utilization. Any system of land tenure has a very definite effect upon the use of the land and can aid or hinder improvements in techniques of land use. "A farmer tied to his land by necessity or affection keeps a better guard over the soil than the flitting tenant."² On the other hand, certain forms of land utilization have led to the introduction of particular land tenure systems, have forced changes in existing systems or have prevented the development of certain systems. In arid regions, for example, where agriculture is dependent upon irrigation, strict control over the action of individual cultivators is necessary. This led to despotic feudalism in such civilizations as those of ancient Egypt or Mesopotamia, where the salinization and alkalinization that disturb modern, privately operated irrigation schemes³ were avoided.

Land Utilization: Land utilization studies deal with the land resources of a geographical or of a political unit. Such studies may attempt to examine and explain existing uses of land, or they may go one step farther and try to plan the land utilization of a geographical or political unit by determining through surveys the best economic uses to which the land can be put.⁴

Basic Classes of Land Use: One may classify land use as follows: (1) agricultural, (2) livestock industry, (3) forestry, (4) mining, (5) recreation and (6) settlement (rural and urban, roads, railroads, etc.). We are especially concerned here with the first three of these land uses, which are the most extensive, without overlooking the fact that the mining resources of a country, for example, concentrated in a small area, can be of infinitely greater importance to the economic life of the country than

¹ *Research in Agricultural Land Tenure: Scope and Method*, prepared under the direction of the Advisory Committee on Social and Economic Research in Agriculture, Social Science Research Council, Bull. No. 20, New York, 1933, pp. 1-2.

² Jacks, G. V., and Whyte, R. O., *Vanishing Lands, A World Survey of Soil Erosion*, New York, 1939, p. 303.

³ A short article, "Social Aspects of Pedology," in *Soils and Fertilizers*, Vol. II, 1939, pp. 49-51, points out the connection between systems of land tenure and soil types.

⁴ Alsberg, Carl L., *Land Utilization Investigations and their Bearing on International Relations*, Institute of Pacific Relations, Honolulu, 1933. Geographical literature, especially such magazines as the *Geographical Review* and *Economic Geography*, are rich sources of land utilization studies.

its forests, although the latter may cover a large percentage of the total area. It is important to know what percentage of a country is or can be used by one of the three great space users and how much is waste land that cannot be utilized.

Forestry, agriculture and the livestock industry compete for the land surface. Two or more uses may be alternative, competitive, combined, or may follow one another in close succession. Forest land is often used for recreational purposes and for grazing. In some regions, especially in marginal ones, restricting natural or economic conditions make only one use possible.

There are areas in which: (a) forest, crops and pasture are competitive uses; (b) crops and pasture are competitive uses; (c) forest and pasture are competitive or joint uses; (d) pasture is the only possible use; (e) forest is the only possible use; (f) the land has none of these three uses—it is waste land.⁵

Factors Determining Land Use: Land utilization is controlled by such limiting physical factors as topography (land forms and degree and exposure of slopes), climatic conditions (length of the growing season, dates of occurrence of severe spring and fall frosts, amount and distribution of precipitation, etc.), the character and quality of the soil and the type of vegetation.⁶ These physical factors impose limits especially upon agricultural land utilization, limitations which can be removed to a certain degree, however, by man. Terracing and contour-ploughing make the utilization of slopes possible; the development of early-maturing or drought-resistant crops, dry farming, irrigation, drainage and terracing overcome climatic limitations; while fertilizers, crop rotation and proper tillage correct unfavorable soil conditions.

The actual modes of land use depend ultimately upon human wants, be they those of the land user himself or of a distant market. Other decisive variants are dietary habits and taboos,⁷ the cultural level and the technical ability of the inhabitants of the land, population density and such economic factors as availability of capital, costs of transportation, tariff policies, standard of living and the cost and supply of labor.

"The utilization of the land in any country at a given moment is a highly complex effect of many causes"⁸ and the change of one or the other of these causes may have far-reaching results that would completely revolutionize the land use. One has only to recall how refrigeration made possible the development of a dairy industry in New Zealand, formerly a sheep-raising country, or how the introduction of elaborate farm machinery changed land utilization in the United States, where thousands and thousands of acres, belonging to hill farms and formerly used for crops and pasture, reverted to forest, while at the same time

⁵ *Research in Agricultural Land Utilization, Scope and Method*, prepared under the direction of the Advisory Committee on Social and Economic Research in Agriculture, Social Science Research Council, Bull. No. 2, New York, 1931, p. 16.

⁶ Baker, O. I., "The Increasing Importance of the Physical Conditions in Determining the Utilization of Land for Agricultural and Forest Production in the United States," *Annals of the Association of American Geographers*, Vol. XI, pp. 17-46.

⁷ In parts of the Orient where religion forbids the consumption of beef or dairy products, very little land is used for pasture, while on the other hand certain African herdsmen look upon agriculture as a pursuit unworthy of a free man.

⁸ Wadham, S. M., and Wood, G. I., *Land Utilization in Australia*, issued by the Australian Institute of International Affairs, under the auspices of the Institute of Pacific Relations, 1939, p. 1.

thousands of acres of pasture land in the Great Plains were brought under drought-resistant sorghums and wheat of low moisture demand, a step later regretted by many a ploughman who was driven from the land by erosion and drought and had to plead for government help to bring the land back under pasture. Breeding of drought- or cold-resisting plants pushes back the frontiers of cultivation set by climate. Vernalization of small grains shortens the growing period of the grain, which is of enormous importance to such countries as the U.S.S.R. and Canada because it moves the polar limits of small grains northward and permits agriculture where formerly the forester, lumberman and trapper were the masters.

Cultivability: It is very difficult if not impossible to estimate the amount of cultivable land on the earth, as there is no common conception of cultivability. Cultivability or arability must be viewed "in terms of the people involved in the use of the land."⁹ The concept of cultivability of a self-sufficient Chinese or Japanese peasant necessarily differs greatly from that of an Australian or American farmer working for the world market. Improvements in agricultural technique or implements, price changes, the invention of substitutes replacing agricultural products, etc., affect the criteria of cultivability. This works both ways; in some instances it enlarges and in others it reduces the area under cultivation.

Classification of Land Utilization: Various attempts have been made to analyse and explain the geographical distribution of forms of land utilization. A classic example is von Thünen's theory of location.¹⁰ In his hypothetical "isolated state" location, i.e. distance from the center of consumption, is the only factor that determines the mode of land use. He finds that bulky products of relatively low value or products that spoil easily have to be produced near the center of consumption, whereas commodities of high value can stand high transportation costs and are therefore found at a considerable distance from the center. The various types of land use arrange themselves in belts around the city lying in the center of the isolated state, these concentric belts decreasing in the intensity of their land utilization in direct ratio to their distance from the center. One is surprised to find that, because of the bulkiness and low value of lumber, forestry is practiced in the second belt, following immediately upon the trucking and dairying belt.

Von Thünen's study is entirely theoretical; he himself very seldom refers to actual cases where land utilization becomes less intensive due to increasing distance from centers of consumption. Both geographers¹¹ and economists, however, have pointed out the actual existence of belts such as those described by von Thünen in his hypothetical isolated state. An excellent illustration of the influence of a city upon the agriculture of the surrounding country has been described in the case of Louisville, Kentucky.¹²

⁹ Zimmermann, Erich W., *World Resources and Industries*, New York, 1933, p. 88, footnote 15.

¹⁰ Thünen, Johann Heinrich von, *Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie*, Hamburg und Rostock, 1863.

¹¹ Waibel, Leo, "Die Wirtschaftsgeographische Gliederung Mexikos," *Festschrift für Alfred Philippson*, Leipzig, 1930, pp. 32-55.

¹² U. S. Dept. of Agriculture, Bull. No. 678 *The Influence of a City on Farming*, Washington, 1918.

Table 1 shows an increase in the size of the farms, but a decrease in land values and rents as one leaves the city. While truck crops and potatoes supply 68% of all receipts in the first zone, they account for only 20% fifteen miles or more away from the city.

TABLE 1. LAND UTILIZATION: THE INFLUENCE OF THE CITY ON AGRICULTURE¹³

DISTANCE FROM LOUISVILLE, KENTUCKY	SIZE OF FARM (in acres)	RENT OF LAND per acre (in dollars)	VALUE OF LAND per acre (in dollars)	PERCENTAGE OF RECEIPTS FROM:		
				Truck and Potatoes	Dairy	Other
8 miles or less	102	11.85	312	68	10	22
9-11 miles	221	5.59	110	35	12	53
12-14 "	256	5.37	106	34	20	46
15 miles or more	257	4.66	95	20	27	53
All farms	211	6.80	158	38	18	44

Geographers have frequently tried to classify the modes of land utilization, especially agriculture and the livestock industry, and to show their geographical distribution on maps. One of the most recent of these is the classification by Whittlesey,¹⁴ who lists thirteen major modes of land use, taking into consideration only the raising of crops and livestock. They are:

(1) Nomadic herding, (2) livestock ranching, (3) shifting cultivation, (4) rudimental sedentary tillage, (5) intensive subsistence tillage, rice dominant, (6) intensive subsistence tillage, without paddy rice, (7) commercial plantation crop tillage, (8) Mediterranean agriculture, (9) commercial grain farming, (10) commercial livestock and crop farming, (11) subsistence crop and livestock farming, (12) commercial dairy farming and (13) specialized horticulture.

In the Far East intensive subsistence tillage is the dominant form of land use. Where the growing season is long enough and water is available in sufficient quantity, paddy rice is the most important cereal, yielding more grain per acre than any other crop. Extremely high densities characterize the irrigable deltas, flood plains and coastal plains of Eastern and Southeastern Asia. Most of the work is done by hand; animal labor is not used for much more than plowing and hauling. Modern machinery is unknown. In addition to the native peasant who practices an intensive subsistence tillage, we find in parts of the Philippines, Indo-China, British Malaya and the Netherlands East Indies entrepreneurs engaged in commercial plantation crop tillage. In remote and mountainous forest regions the shifting cultivator ekes out his meager living by cultivating small patches for one, two or three years. As soon as his yields decline he abandons his old field, which then reverts to forest, and burns off a new clearing.

¹³ As quoted in Ely, R. T., and Wehrwein, G. S., *Land Economics*, Ann Arbor, Michigan, 1928, p. 49.

¹⁴ Whittlesey, Derwent, "Major Agricultural Regions of the Earth," *Annals of the Association of American Geographers*, Vol. XXVI, 1936, pp. 199-240.

There can hardly be a greater contrast than that between Oriental and Western agricultural land uses as the latter is practiced in Australia, New Zealand, Canada and the United States. All of these countries are young, recently settled, thinly peopled, with an agriculture which is highly commercialized and is characterized by a wide use of mechanical energy. The machine reduces man and animal labor requirements to a minimum and makes large surpluses possible, because the individual farmer can cultivate a much larger area than can the Oriental peasant and does not have to feed human or animal labor, but uses kerosene, gasoline and electricity to run his machinery.

Destructive Land Use and Land Conservation: In recent years we have become very much aware of the fact that in many parts of the world man, through his bad stewardship, is rapidly destroying the soil cover by accelerating the process of erosion.¹⁵ "Geological erosion" or denudation is a normal process, "without which the world would have died long ago."¹⁶ Under normal conditions there exists a balance between soil formation and the removal of worn-out soil through denudation. But whenever this balance is disturbed because of improvident land use—deforestation, over-grazing or the improper cultivation of slopes or sloping fields—the denudation process is accelerated to such a degree that the soil-forming process cannot keep abreast of it, a situation which is commonly known as soil erosion.

A comparison of Japan with North and Central China illustrates most dramatically the tragic results of man's continuous misuse of the land. Although the Chinese have long recognized the connection between deforestation and soil erosion—a Chinese proverb says "mountains exhausted of forests are washed bare by torrents"—the Chinese peasant destroyed the forest vegetation of his mountains and hills in order to obtain fuel, building material and additional land whenever land became scarce as a result of population increase. Today the mountains and the hill regions of northern China are completely denuded of their soil and badly dissected by gullies, and the rivers are choked with silt, causing catastrophic floods in the densely settled plains. The floods, for example, of the Yellow River are not caused by the quantity of water that has to be carried to the sea, but by the fact that the river receives too much water at one time and by the enormous amount of silt that burdens it. The silt deposits have raised the river so that it flows for long distances between embankments above the level of the surrounding plain. The denuded slopes have lost their water-absorbing and water-retaining capacity so that the rain water runs off immediately and, if the rains are heavy enough, floods are inevitable—whereas formerly rain water would reach the river only gradually.

Today it is generally recognized that it will be impossible to control the Yellow River merely by means of engineering in the plains. Only soil conservation—that is, large-scale reforestation measures—in the mountain and hill country upstream will help, a task which seems super-human.

¹⁵ For a survey of conditions in Pacific countries see Jacks, G. V., and Whyte, R. O., *Erosion and Soil Conservation*, Herbage Publication Series, Bull. No. 25, 1938.

¹⁶ Jacks, G. V., and Whyte, R. O., *Vanishing Lands, A World Survey of Soil Erosion*, New York, 1939, p. 3.

Central and South China have also lost a large part of the forest and soil cover, but innumerable terraces have checked erosion quite effectively in areas where rice is grown.

Japan is a mountainous country with very little level land; the population density is so high that every arable square foot has to be used intensively. In contrast to the Chinese, however, the Japanese have not only recognized the danger of mountain deforestation and erosion, but they have done everything possible to protect the forest cover. Where slopes were deforested in the past, conservation measures have been applied to re-establish a vegetation cover in order to check erosion which otherwise would endanger the rice fields below.¹⁷ Land utilization in Japan today is so well adjusted to the physical conditions of the country that there is practically no soil erosion going on.

During the course of centuries the farmers of northwestern Europe developed methods of land use well suited to their land, but the same European farmers gutted the lands of the New World, i.e. the Western Hemisphere, Australia, New Zealand and South Africa. The abundant supply of new land and the ease with which it could, and in some countries still can, be obtained seemed to make the practice of conservative husbandry superfluous. They misused the land to such an extent that over wide areas its productive capacity has been greatly reduced if not completely destroyed.¹⁸

The destruction of the land and its resources will continue until land utilization practices are adjusted to the respective natural environment;¹⁹ mere mechanical anti-erosion measures do not go to the root of the problem. This does not mean, however, that the use of such mechanical devices is not valuable in the fight for the conservation of a nation's most priceless possession. The complete reorganization of the land use of a country is an extremely difficult task²⁰ and requires careful and intelligent planning on the part of the authorities and cooperation on the part of the farmers. If this cooperation cannot be obtained it will be necessary to enforce the changes by law, in order to protect the future of the country. The realization is spreading that the individual cannot claim the right to do with his land as he pleases because he may not only ruin his own land but also that of his neighbors.

The necessity for the development of conservation measures and proper land use methods exists not only in the temperate zone but also in tropical countries, especially in those where shifting cultivation, a primitive form of field-forest economy, is practiced. This form of land use is known in Latin America as conuco or milpa, in the Philippines as caingin, in French Indo-China and Thailand as ray, in Malaysia as ladang,

¹⁷ See Lowdermilk, W. C., "Erosion Control in Japan," *Oriental Engineer*, 1927, Vol. 8, 3, pp. 3-13. Derweiler, S. B., "Fifty Years' Experience Gives Japan Simple, Effective Program," *Soil Conservation*, 1937, Vol. 3, pp. 9-10; and Tokutaro Hirata, *On the Devastations of Mountains in Japan*, Department of Forestry, Ministry of Agriculture and Forestry, Tokyo, 1939.

¹⁸ Sauer, Carl, "Destructive Exploitation in Modern Colonial Expansion," *Comptes Rendus du Congrès International de Géographie*, Amsterdam, 1938, Leiden, 1938, Vol. II, Section IIIc, pp. 494-499.

¹⁹ See Mukerjee, Radhakamal, *The Regional Balance of Man*, University of Madras, 1938.

²⁰ "Great changes have to be made in the kinds and quantities of crops produced, exported and imported by different countries, internal and external trade relations and policies will be affected, and perhaps most significant of all, the conditions of land tenure and occupancy upon which the social structure of a civilized community is founded, will have to be re-defined." Jacks and Whyte, *Vanishing Lands*, p. 25.

in Burma as *taungya* and in Ceylon as *chena*.²¹ The shifting cultivator selects a piece of forest land, cuts and burns the vegetation during the dry season and raises from two to four crops on the clearing. His tool is the digging stick or the hoe, ineffective for the control of weeds and grasses. As soon as the weeds become too numerous and the yields decline, the farmer makes a new clearing; the old one reverts ultimately to secondary forest if fires are kept out. Grasses such as *Imperata exaltata*, *Imperata cylindrica*, and *Saccharum spontaneum* rapidly invade the clearings. These grasses are very inflammable during the dry season. Fire does not affect their persistence, however, because of their manner of reproduction, whereas trees that may have escaped the first fire or young tree seedlings will be killed. The final result is that the grasses establish a complete hold over the land, and trees have no chance to invade the grassland as long as the grass fires continue to reappear. Without good ploughs and draft animals the native has no chance of bringing the grass-covered land under cultivation again. The repeated fire destroys the humus content and affects the soil structure.²² This explains the presence of extensive grasslands in the Netherlands East Indies, Malaya, Thailand, Indo-China, the Philippines, and in Central and tropical parts of South America where the original vegetation was forest.

As long as the population that practices shifting cultivation is small and as long as the land reverts to secondary forest there is no particularly great danger in this form of land use, but when the population increases and destroys the forests faster than they grow, or when grass takes the place of forest, then it becomes necessary to stop the continuation of this practice by teaching the natives better methods of cultivation which allow continuous use of the same plots, such as crop rotation, the use of the plough and animal labor. Where that is not possible foresters issue clearing-permits on land that has no merchantable lumber (the Philippines) or they employ the shifting cultivators by allowing them to cultivate land that has been lumbered in return for the planting of young trees (the so-called *taungya* system, first developed in Burma).²³

Land Tenure: Land tenure studies are concerned with the rights of land use enjoyed by man and with the effects of these rights on the social and economic welfare of the individual and of society.²⁴ These rights are defined by custom and by law, be it written or unwritten, and are jealously guarded by those whom they favor. The land tenure concept of a people is fluid and is an expression of their culture or of their political organization. For that reason land tenure conditions change from country to country and sometimes even from region to region because of a different historical development.²⁵ Land tenure systems are continuously undergoing changes, partly because of government intervention,

²¹ See: Whittlesey, Derwent, "Shifting Cultivation," *Economic Geography*, 1937, pp. 35-52, "Fixation of Shifting Cultivation," *Economic Geography*, 1937, pp. 139-154.

²² Freise, Friedrich W., "Untersuchungen über die Folgen der Brandwirtschaft auf Tropischen Boden," *Der Tropenpflanzer*, 42. Jg., 1939, 1, pp. 1-22.

²³ Heske, Franz, "Ziele und Wege der Tropischen Kolonialforstwirtschaft," *Kolonialforstliche Mitteilungen*, Vol. 1, 1938, 1, pp. 80-114.

²⁴ *Research in Agricultural Land Tenure*, et., p. 2.

²⁵ See the various articles on "Land Tenure" in the *Encyclopedia of the Social Sciences*, Vol. 9, pp. 73-127.

but mainly because of economic and social forces. We have only to think of Russia, which in the last 80 years has experienced three fundamental changes in her agrarian structure. In 1861 the feudal system was displaced by the *mir*—a communal open-field system—which in 1906 was in turn replaced by the enclosures introduced by the agrarian reform of Stolypin. The Bolshevik Revolution ultimately brought complete collectivization.

A comparison of Australia, New Zealand, Canada and the United States shows striking differences in land tenure systems, even though all four countries are of British origin. The government of the United States has favored a policy of transferring the public domain very rapidly into private ownership, whereas Australia and New Zealand have retained a major share of the public domain, so that a high percentage of the land is held under lease. Canadian forests have remained public domain, a result of the policy of disposing of the timber by means of cutting licenses rather than by outright sale of the forest land. This makes it possible for the government to control the logging operations, a desirable procedure not possible in the United States.

Western ideas of land ownership and land use differ widely from those of colonial peoples, so that the question of land ownership is the most serious and difficult one faced by all colonial powers. The idea of land as private property and therefore a saleable commodity is frequently foreign to these colonial peoples, many of whom hold their land communally. In some instances they recognize private ownership only of the plot on which their house stands and on which they have their garden and fruit trees. A great number of difficulties arose from the fact that white men considered all land that was not under actual cultivation as "wild land" and declared it crown or government property. This "wild land" was turned over to entrepreneurs and only much later was it discovered that this land had been utilized by the natives for one purpose or another. In Java, for example, the government is now making amends by buying back such land and turning it over to those peasants who are in great need of agricultural land.

Today we see a general tendency in colonial areas of the Pacific to give the peasant legal security on his land, and in all colonies alienation of native land to non-natives is either entirely prohibited or has been placed under government control.

Statistics on conditions of land ownership throw light on the social and economic status of a country and especially on that of its agricultural population: Who owns the land, those who actually till it or a few privileged families who lease it out to tenants? What percentage of the land is held by large landowners and what by small landowners who themselves work as farmers? What percentage of the agricultural population belongs to the tenant class? What is the relationship between landlord and tenant; what are the usual terms of the agreement between the two—cash tenancy or share tenancy? What is the average size of agricultural undertakings? Tenancy is closely connected with the question of credit in rural regions, and usury is often the cause of tenancy—especially in Oriental countries.

B. LAND UTILIZATION AND LAND TENURE DATA FOR INDIVIDUAL COUNTRIES

When examining statistics on land utilization and land tenure one must always bear in mind the fact that the data on the various countries are not based upon the same assumptions or principles. Different natural and economic conditions give them different meanings, so that much caution must be exercised in making comparisons or in drawing conclusions that involve several countries. (References to "present-day frontiers" indicate the frontiers as of mid-1939, and exclude territories acquired thereafter.)

1. UNION OF SOVIET SOCIALIST REPUBLICS

Survey of Land Use Conditions: The most striking fact about land utilization in the U.S.S.R. is that the crop area occupies only about 5 to 8% of the total domain. This has given rise to the general belief that as Russia is a very large country a considerable part of which is very thinly settled or even unsettled, the Union has an unlimited supply of land which could be put to agricultural use. Such an idea is not based on concrete facts or calculations of the area suitable for agriculture. A survey of the actual conditions reveals that the possibilities for expansion are quite limited by climate, soil and topography. Timoshenko¹ points out that there is a vast difference in the use of land in European and in Asiatic Russia. In the European portion the area under the plough was nearly one third (32.4%) of the total area in 1932, while in Asiatic Russia it was only 2.4%. If the northern regions of European Russia, i.e. the land north of the 60th parallel, are not included in the calculation, on account of their limited suitability for crop production, then nearly half (48.6%) of the remaining European area is taken up by fields. Only 17.2% of European Russia below the 60th parallel is under woods and forests, so that we cannot expect any considerable increase in the cultivated area at the expense of the forested area. Whatever increase comes will take place in the southern parts of the taiga where barley, oats, flax, fodder crops and grass do well. The second Five-Year Plan anticipated the winning of 5 million hectares through clearing, draining and melioration in Middle and Northern Russia, i.e. north of the chernozem belt. The podsol forest soils, however, are poor in humus and nutritive minerals and will require costly clearing and melioration, so that no sudden enormous increase of the crop area in European Russia can be expected.

Quite different is the situation in Asiatic Russia. The Russian peasants followed the steppe and semi-steppe with its famous chernozem soils through Western Siberia south of the great forest belt, the taiga, and pushed across the highly podzolized soils of the forest-steppe plateaus of Eastern Siberia into the valuable dark-colored meadow soils of the Amur valley. So far they have brought only a small percentage of the Asiatic part of the U.S.S.R. under cultivation. According to sources quoted by Timoshenko, only 2.4% of Asiatic Russia was occupied by fields in

¹ Timoshenko, Vladimir P., *Agricultural Russia and the Wheat Problem*, Stanford, 1932, p. 37.

1928 and an additional 3.3% by meadows and pasture. No doubt there are considerable areas in Siberia, Central Asia and the Far Eastern Region that can be converted to agricultural use. There are definite climatic limits, however, to the extension of agriculture. Temperature conditions above all limit the spread of agricultural settlement polarward² while in Central Asia the lack of rainfall is the main obstacle. ✓ The Soviets expect to increase the crop area of Siberia and the Far Eastern Region through large capital investment, and to finance, among other things, the clearing of forests, the melioration of the soil and the construction of a communication system. In Kazakhstan steppe land can be brought under crops with the help of dry-farming methods combined with the use of modern machinery on a large scale, and in special cases land can be irrigated.³

TABLE 2. U.S.S.R.: AREAS ECONOMICALLY SUITABLE AND UNSUITABLE FOR AGRICULTURE.⁴

CLASSIFICATION	SQUARE KILOMETERS	% OF TOTAL
1. Unsuitable areas outside of agricultural zones	5,682,800	26.7
2. Unsuitable areas inside of agricultural zones	6,170,000	28.8
3. Suitable areas	9,530,000	44.5
Total	21,382,800	100.0

TABLE 3. U.S.S.R.: AREAS ECONOMICALLY SUITABLE FOR AGRICULTURE.⁵

(In square kilometers)

Ploughland	...	2,050,000
Meadows	...	450,000
Forest land	...	6,180,000
Pasture on chestnut soil (arid steppe)	...	500,000
Pasture on gray soil (scrozem—extremely arid steppe)	...	140,000
Mountain steppe	...	120,000
Mountain meadow	...	90,000
		9,530,000

Ugrimoff has summarized the results of the investigations of Russian soil specialists.⁶ In order to determine the areas suitable and unsuitable for agriculture and other uses, such as forestry, the whole realm has been divided into three categories as shown in Table 2.

Table 2 shows that more than one fourth (26.7%) of the Soviet Union is entirely unsuited for agriculture because of climate, soil or relief: more

² Prasalov, L. I., "The Climate and Soils of Northern Eurasia as Conditions of Colonization," *Pioneer Settlement*, American Geographical Society, Special Publication No. 14, New York, 1932, pp. 240-260.

³ Rowman, Isaiah, *Pioneer Fringe*, American Geographical Society, Special Publication No. 13, New York, 1931, pp. 258-262.

⁴ Ugrimoff, A. von, "Die Ackerbaukapazität des Russischen Raumes," *Berichte über Landwirtschaft*, N. F. Band XXIII, 3, Berlin, 1938, p. 542.

⁵ Ugrimoff, *op. cit.*, p. 542.

⁶ Ugrimoff, *op. cit.*, pp. 538-554.

than one fourth (28.8%) of the total area consists of soils which lie in the agricultural zone but are at present not suited for agriculture and cannot even be used as pasture. A part of these latter areas, however, could be turned to agricultural use through melioration. Less than one-half consists of agricultural and forest land that is or can be utilized without melioration. Table 3 gives details for the third category.

A part of the land in the second category and a part of the forest and pasture land of the third category represent the reserve for new arable land. Prasalov gives the estimates in Table 4.

TABLE 4. U.S.S.R.: RESERVE AREAS⁷
(In square kilometers)

1. Northern forests (taiga)	300,000
2. Swampland	150,000
3. Deciduous forests of the chernozem (forest-steppe belt)	30,000
4. Salt-containing chernozem steppe	30,000
5. Mountainous chernozem steppe	40,000
6. Steppe on chestnut-brown soils	200,000
7. Steppe on gray soils	40,000
8. "Takyri" (Central Asia)	22,000
9. Alluvial soils of Central Asia	5,000
	<hr/> 817,000

After a detailed study of the reserve areas, Ugrimoff comes to the conclusion that these areas are for the most part outside the Russian agricultural zones. In the north, on the edge of the Arctic Circle, are 300,000 square kilometers of North European and Siberian forest and moorland; 150,000 square kilometers of swampland lie mainly in the north, and an additional 262,000 square kilometers in the arid and semi-desert regions of Central Asia.

Ugrimoff, furthermore, believes that 567,000 of these 817,000 square kilometers could become ploughland, while the rest would have to be turned into meadows. According to the sources quoted by Ugrimoff, only 2,050,000 square kilometers or 9.6% of the total territory of Russia is under the plough. The ploughland can be increased by 567,000 square kilometers or 27.6%, so that it would finally occupy 12.2% of the total area. This gives a clear picture of the unfavorable relationship of the areas of the Union that are suitable for agriculture and those which, due to unchangeable natural conditions, are unsuitable.

Survey of Land Utilization: Table 5 gives us information as to the utilization of the land of the various republics of the Soviet Union. There are considerable differences between the various parts of the Union, an expression of natural and cultural conditions.

Russian agriculture is still less advanced than Western European agriculture. The three-field system and even more primitive systems are

⁷ As quoted by Ugrimoff, p. 543. Compare these figures with the highly optimistic figures given in the *Handbook of the Soviet Union*, New York, 1936, pp. 43-44. There it is claimed that 11 million square kilometers, or nearly 50% of the total Union, are suitable for agriculture. It is apparent that the authors have added the forest area to the agricultural area.

TABLE 5. U.S.S.R.: LAND UTILIZATION IN THE REPUBLICS, DECEMBER 31, 1934^a
(In thousand hectares)

TYPE OF UTILIZATION	R S F S R (a)	FAR EASTERN REGION	KAZAKH- STAN	KIRGHIZIA	UKRAINE	WHITE RUSSIA	AZER- BAIDZHAN	GEORGIA	ARMENIA	UZBE- KISTAN	TURK- MENISTAN	TADSHI- KISTAN	U.S.S.R.
Under Homesteads with fruit gardens and vineyards with kitchen gardens	9,034 212 3,455	141 5	351 3 71	92 3 0	3,202 199 1,876	445 42 286	66	117 4 4	28 3	181 30 40	32 5	64 17 8	13,169 512 5,669
Gardens, separately situated from homesteads	337		12	3	190	10	65	93	16	38	2		751
Kitchen gardens, separately situated from homesteads	698	3	25		419	11	16	17	6	12	7		1,186
Fields	180,973	2,333	41,435	1,955	28,493	3,898	1,993	1,206	619	4,477	991	1,266	223,916(b)
Meadows	47,902	2,801	9,131	436	1,865	2,043	169	170	139	880	64	22	53,274
Those flooded in Spring	5,224				741	357	42		3			1	6,368
Dry meadows	17,072				554	899						11	18,536
Swampy meadows	2,680				579	78						5	4,051
Others	22,926				11	0	127	170(d)	136	880(d)	64(d)	5	24,519
Pastures	282,034	4,277	152,524	11,158	1,907	713	3,148	1,649	1,446	9,191	38,350	5,612	344,050
Steppe	21,643				515		1,945	257		6,797		141	31,298
Mountainous	5,477				399		1,641	735	1,263	1,641		956	11,674
Others	254,914				993	713(d)	0	657	183	753	38,350(d)	4,515	301,078
Forest	783,118	91,657	11,212	982	3,393	3,842	935	2,520	300	708	683	703	801,202
Bushes	8,822	802	509		358		90	289	10	216	28	57	9,940
Swamps	105,703	16,590	387	1	733	463			4	61	33	5	107,002
Other Lands	465,005	13,530	56,725	5,236	3,947	944	1,323	370	397	2,145	4,175	6,599	494,905
TOTAL	2,056,172(c)	299,700(c)	274,311	19,863	44,527	12,369	7,805	6,431	2,965	17,909	44,365	14,328	2,206,871(c)

(a) Including the Far Eastern Region, Kazakhstan and Kirghizia, which are also given separately.

(b) Consists of 131,473,000 hectares of sown area and 92,442,700 hectares of fallow of various kinds.

(c) Including 167,476,000 hectares of undistributed land in Northern Russia and Sathalin.

(d) Undistributed by type.

8 *Selkhan Khorzayev* USSR, 1935, Moscow, 1936.

still used, which explains the high percentage of fallow land. The total arable land or, as it is called in Table 5, the field area, amounted to 223,916,000 hectares in 1934, of which in that year only 131,473,000 hectares were actually sown and 92,442,700 hectares were fallow of various kinds. Bare and green fallow, a link in the three-field and other rotation systems, accounted for 26,339,800 hectares, whereas 66,102,900 hectares were arable and had once been under cultivation, but had been abandoned for a rest period of several years to restore fertility. Such land is found in the steppe and forest regions, in other words in areas where land is so abundant that the peasants can shift their fields when yields diminish instead of preserving the fertility by the use of manure or commercial fertilizers or the seeding of such soil-building crop as legumes.

Cropland. The area under crops (i.e. grain, "technical" or "industrial" cultures,⁹ vegetables, and grasses¹⁰) has increased considerably since pre-War days. Whereas in 1913 only 104.9 million hectares were under

TABLE 6. U.S.S.R · CROP AREA¹¹
(In thousand hectares)

CROPS	1913	1928	1932	1936	1937	1938
TOTAL CROP AREA	104,998 6	112,992 4	134,434 7	133,832 1	135,313 1	136,943 1
CEREALS, Total	94,358 4	92,172 3	99,699 7	102,441 3	104,444 8	102,411 0
Rye, winter	24,970 3	24,118 2	25,774 6	21 452 8	22,666 1	21,180 6
Rye, spring	843 0	528 6	415 4	311 8	306 2	269 9
Wheat, winter	7,329 7	6,178 0	11 814 7	13 065 5	14,325 7	14,584 3
Wheat, spring	24,324 9	21,552 2	22,689 2	25,903 9	27,057 3	26,927 5
Barley, winter	608 5	387 7	345 4	506 4	612 3	700 7
Barley, spring	10,827 8	6,908 5	6 498 6	8 621 7	8,565 8	8,512 0
Oats	16 870 5	17,245 6	15 423 4	18,053 6	17,633 3	17,882 1
Corn (maize)	1,271 9	4,386 2	3,665 8	3,092 8	2,820 0	2,608 8
Millet	3,476 2	5,693 4	7 677 6	4,377 4	4 404 7	3,924 1
Buckwheat	1,974 0	2,924 5	1,661 8	2,085 6	1,848 0	2,084 7
Rice	270 0	217 3	122 3	142 9	156 2	163 6
Beans and peas of all kinds	1,247 0	966 7	2,128 4	2,995 3	2,981 4	2,518 8
Other cereals	344 6	1,065 4	1,482 5	1 831 8	1,067 8	1,053 9
"TECHNICAL" CULTURES						
Total	4,550 5	8,615 4	14,977 2	10 831 5	11,152 1	10,959 5
Cotton	688 0	971 3	2 172 0	2,034 5	2,091 8	2,082 9
Flax	1,398 0	1,735 6	3,155 0	2,374 1	2,459 2	2,234 1
Hemp	645 0	912 7	920 6	681 5	579 9	654 4
Sunflower	968 7	3,904 9	5,306 0	3,177 7	3,250 3	3,144 5
Sugar beet	648 7	769 7	1,537 8	1,255 7	1,193 4	1,180 3
Tobacco	29 5	45 2	99 2	94 4	96 7	95 4
Makhorka (a cheap type of tobacco, not included in above)	32 9	36 2	147 5	109 7	107 4	104 5
Others	139 7	239 8	1,539 1	1,103 9	1,373 4	1,463 4
ALL VEGETABLES & POTATOES						
Potatoes	3,815 5	7,683 4	9,215 4	9,797 0	8 991 5	9,385 4
Potatoes	3,063 6	5 677 6	6,111 4	7,577 2	6,865 1	7,365 0
Vegetables	487 1	797 1	2 235 6	1,503 5	1,387 0	1,319 6
Melons (water & others)	264 8	1,208 7	868 4	716 3	739 4	700 8
ALL GRASSES						
Annual grasses	2,050 0	3,871 5	10,631 6	10,645 9	10,635 7	14,101 9
Perennial grasses	601 0	1,152 5	4,461 3	4,722 1	3,549 8	4,455 0
Others	1,449 0	2,414 6	3,788 9	4,532 4	5,561 2	8,230 0
	..	304 4	2,381 4	1,391 4	1,524 7	1,416 9

⁹ These include cotton, flax, hemp, sugar beets, groundnuts, sunflowers, tobacco, etc

¹⁰ Such as alfalfa and sweet clover

¹¹ *Posvetnye Ploshchadi SSSR v 1938 g*

crops, the crop area increased to 131.5 million hectares by 1934 and to 136.9 million hectares by 1938. There are remarkable differences in the growth of certain crop areas. For example, the cotton area increased by about 200%; the area under flax was nearly doubled; winter wheat nearly doubled its area, while spring wheat increased only slightly; winter rye shrank by about 15%, while the potato area increased by 140.4%.

The fact that the area under cereals increased by only 8.5% while the total area under crops was enlarged by 30.4% deserves attention. Whereas cereals occupied about 90% of the crop area in 1913, they took only 75% in 1938, a result of the introduction of crop rotation. It is to be expected that this trend will continue as more and more collective farms adopt crop rotation and thus enlarge the area under both cultivated and forage crops.

Wheat is the principal small grain of the U.S.S.R. Some remarkable changes have taken place in the distribution of wheat.¹² Formerly wheat was grown chiefly in the black and chestnut-brown soils of European Russia and Western Siberia. The Soviets have introduced or considerably increased the growing of wheat in such regions as Leningrad, Yaroslav, Moscow, Gorky and Tartar A.S.S.R. which in pre-War days depended entirely upon the importation of wheat from the chernozem belt. The goal of the Soviets is to change this wheat-consuming zone into a zone that produces nearly all of its own grain. The great growth of the winter wheat area is very important because winter wheat has higher yields than spring wheat. This growth was only made possible by the development of cold-resistant varieties.

Intensification of Land Utilization There have been in the Soviet Union two different opinions about the future trend of land utilization. The one argues for an extension of the agricultural area, while the other is for an improvement of agricultural techniques within the present boundaries, i.e. by changing from the three-field system to a rational crop

TABLE 7 USSR DISTRIB OF PARCELLING BEFORE
REVOLUTION¹³

PER CENT OF PEASANTS	NUMBER OF STRIPS MAKING UP THE FARM
3.7	under 11
10.5	11-20
33.9	21-40
25.6	41-60
19.6	60-100

rotation system which would do away with fallow, improve soils and increase yields. Collectivization automatically enlarged the crop area by doing away with the many field boundaries. Table 7, which refers only to the northern provinces of European Russia, gives an idea of the extent to which the land of the peasants was parcelled.

Field boundaries were frequently the starting point for weeds which penetrated into the neighboring fields and lowered the yield or at least

¹² Compare the map of the distribution of wheat by Th. H. Engelbrecht in his excellent study, *Landwirtschaftlicher Atlas des Russischen Reiches in Europa und Asien* Berlin, 1916 with the sketch map of the wheat regions by Mikhailov, Nicholas, *Land of the Soviets* New York 1939, p. 55.

¹³ Symposium, O Zemle Moscow 1921 part 1 pp. 54, as quoted in Grajdanzov Andrew J., *The Collectivized Agriculture in the Soviet Union*, M. A. Thesis, Univ. of California, Berkeley 1938 (unpublished).

increased the peasants' labors. The use of chemical fertilizers and green manure, the increased cultivation of intertilled crops, and the deep tillage of soil made possible by modern ploughs and tractors and mechanical harvesting have led to an increase of yields at least in a part of the collective farms, but Russian yields are still low in comparison to those of other countries. Most important for the improvement of Russian agriculture is the work of plant geneticists, who have given the Russian peasant better varieties of cereals and other crops. "The introduction of a better variety in an agricultural area means an immediate profit to the agriculturist. It improves the crop either in quantity or in quality, while scarcely increasing the cost of cultivation."¹⁴ It must be admitted that the collectivization of the peasants, which was carried through with great speed and under great pressure, led to many mistakes and a considerable temporary disruption of agricultural production. Especially disastrous was the large reduction of draft power resulting from wholesale slaughter of livestock, which the government met with efforts to mechanize the work on collective farms as rapidly as possible. But conditions have since improved and many of the collective farms are now operating with much better results than the small peasants could ever have obtained. Even a poorly managed large farm operating with modern methods can be more efficient than a carefully managed, small peasant undertaking employing antiquated techniques under the old village strip system.¹⁵

As late as 1928 the equipment used by peasants was very primitive, as illustrated in Table 8.

TABLE 8. U.S.S.R.: TECHNICAL AGRICULTURAL EQUIPMENT, 1928¹⁶

EQUIPMENT	MILLION HECTARES	PER CENT OF TOTAL
Ploughing with wooden ploughs	8.1	9.8
Spring sowing by hand	61.2	74.4
Harvesting of grain with sickles	14.3	15.5
Harvesting of grain with scythes	26.6	28.8
Threshing of grain with flails	12.0	13.0
Threshing by other manual methods	25.5	27.7

Since then the mechanization of agriculture has made great progress. The collective farms have a certain number of implements and draft animals with which they do as much of the work as possible. In addition, the government-owned machine-tractor-stations (M.T.S.) plough, seed and harvest certain acreages of the collectives with the modern equipment at their disposal. The amount is determined by contracts made between the collective farms and the M.T.S. For this work the M.T.S. receive 20% of the total crop.

Forest Resources: The Soviet Union possesses about one-fourth of the forest area of the world, but in spite of the wealth which this area re-

¹⁴ European Conference on Rural Life, 1939, *Conditions and Improvement of Crop Production, Stock-raising and Rural Industries*, Contributions by the International Institute of Agriculture, Document No. 5, Geneva, 1939, p. 9.

¹⁵ Schiller, O., "Bedeutung und Aussichten der Agrarkollektivierung in der Sowjetunion," *Berichte über Landwirtschaft*, N.F., 1936, Bd. XXI, 2, pp. 426-451.

¹⁶ *Summary of the Fulfillment of the First Five-Year Plan*, Moscow, 1933.

presents the Russians face enormous difficulties in the adequate utilization of these resources. The main handicaps are the very uneven geographical distribution of the forests, the inadequately developed transportation system, remoteness from the centers of domestic and foreign consumption, the direction of the flow of the great Siberian rivers, which favors exports but hampers home consumption, and the shortage of labor.

TABLE 9. U.S.S.R.: TECHNICAL EQUIPMENT OF AGRICULTURE,
AT THE END OF THE YEAR¹⁷
(In thousands)

EQUIPMENT	1933	1934	1935	1936	1937	1938
Tractors, number	210.9	276.4	360.3	422.7	454.5	483.5
Tractors, h.p.	3,209.2	4,462.8	6,184.0	7,672.4	8,385.0	9,256.2
Combines, number	25.4	32.3	50.3	87.8	128.8	153.5
Locomobiles and internal combustion engines, number	48.0	60.9	69.1	72.4	77.9	83.8
Threshers, number	120.3	121.9	120.1	123.7	126.1	130.8

Statistics on the forest area are far from being exact. Table 5 lists 801,202,000 hectares of forests; *Sotsialisticheskoi Stroitel'stvo S.S.S.R* for 1935 reports a forest area of 918,363,000 hectares; the *International Yearbook of Forestry Statistics*¹⁸ lists a total forest area of 951,353,000 hectares for 1934; while M. Sdovik¹⁹ assumes 993,000,000 hectares in January 1938. There is a great difference between the forest area and the actually wooded area. Furthermore, only a small percentage of the wooded area is exploited. The easily accessible European forest area suffered considerably from the ruthless felling of trees after the abolition of the

TABLE 10. U.S.S.R.: FOREST AREA, JANUARY 1, 1934²⁰

REGION	TOTAL FOREST AREA (Thousands hectares)	PROPORTION OF EXPLOITED TO TOTAL FOREST AREA (Percentages)	PRODUCTIVE FOREST AREA (Thousands hectares)	WOODED AREA (Thousands hectares)	PROPORTION OF WOODED TO TOTAL LAND AREA (Percentages)
U.S.S.R. Total	951,353	35.8	544,523	456,320	21.5
R.S.F.S.R.	935,644	35.2	531,798	445,309	23.0
West Siberia	60,084	57.5	35,357	30,622	22.6
East Siberia	250,793	24.2	157,359	104,701	27.9
Yakutia	277,240	1.9	116,581	116,581	37.9
Far East	112,349	31.2	69,499	54,672	18.4
Ukraine	2,500	99.9	2,277	1,804	4.0
White Russia	3,123	100.0	2,694	2,127	16.8
Transcaucasus	3,563	67.6	3,021	2,798	15.1
Uzbekistan	1,455	100.0	983	851	4.9
Turkmenistan	2,891	50.6	2,658	2,452	5.5
Tadzhikistan	2,177	33.9	1,092	979	6.8

¹⁷ "Stalin's Report," *Dolzhenok*, March 1939.

¹⁸ *International Yearbook of Forestry Statistics*, 1933-35, Rome, 1936, Vol. 1, p. 217.

¹⁹ Sdovik, as quoted by Buchholz, P., "Der Rückzug der U.d.S.S.R. vom Weltholzmarkt," *Zeitschrift für Weltforstwirtschaft*, Bd. VI, 3, 1938, p. 150.

²⁰ *International Yearbook of Forestry Statistics*, 1933-35, Rome, 1936, Vol. 1, pp. 217-219.

principle of sustained yields, while the greater part of the Asiatic forest area is untouched and constitutes a "dead forest massif" whose timber is frequently overmature and rotten.²¹

✓ TABLE 11. U.S.S.R.: DISTRIBUTION OF FOREST AREAS AND TIMBER RESOURCES²²

REGION	WOODED AREA		TIMBER RESOURCES	
	Million hectares	Per cent of Total	Million cubic hectares	Per cent of Total
Old industrial regions (Leningrad, Moscow, Kalinin, Yaroslavl, Ivanovsk)	11.4	2	753	2
Southern and southwestern regions (Ukraine, White Russia, Kusk, Voronezh)	7.7	1	425	1
Volga region	26.7	5	2,835	8
Caucasus	4.1	1	582	2
Central Asia	21.1	4	177	...
Northern regions of European Russia (including Karelia and Komi)	49.2	10	3,996	12
Siberia and the Far East	395.5	77	25,846	75
Total	515.7	100	34,614	100

Three-quarters of the wooded area and the timber resources of the Soviet Union are located in Asia, but around 1932 about two-thirds of the cut timber came from middle and southern Russia, that is, from those regions which have only 13% of the wooded area. Because of the depletion of the resources of the easily accessible areas the second Five-Year Plan provided for a gradual shift of the lumber industry to the richly forested areas.

✓ TABLE 12. U.S.S.R.: TIMBER PRODUCTION²³ ✓

REGION	1932		1937 (plan) (a)	
	Million cubic meters	Percent of Total	Million cubic meters	Per cent of Total
Old industrial region	39	20	41	15
Southern and southwestern region	24	18	16	6
Volga region	40	24	57	21
Caucasus	2	1	4	2
Central Asia	1	1	2	1
Northern regions	28	17	59	22
Siberia and the Far East	31	19	88	33
Total	165	100	267	100

(a) Actual production in 1937 was 201.5 million cubic meters of all kinds of timber, including 111.3 million cubic meters of timber for further processing. Production of sawed timber in 1937 was 33.8 million cubic meters, including 672,300 cubic meters of plywood.

²¹ Buchholz, E., "Forstwirtschaftliche Probleme im Eurasiatischen Wirtschaftsraum," *Zeitschrift für Weltforstwirtschaft*, Bd. I, 2/3, 1933, pp. 121-142, "Die Waldflächen und die Holzvorräte der Sowjetunion," *ibid.*, Bd. II, 4/6, 1935, pp. 193-223.

²² Buchholz, E., "Der Rückzug der U.d.S.S.R. vom Weltholzmarkt," *op. cit.*, p. 150.

²³ *Ibid.*, p. 151.

Afforestation: Afforestation is necessary in the steppe region of Southern Russia in order to protect the agricultural land against erosion. It was begun by German colonists in the first decade of the nineteenth century. These early plantings served as shelter belts. In recent years the Russian interest in shelter belts has been revived and the Five-Year Plans have called for new plantings.

TABLE 13. U.S.S.R.: AFFORESTATION²⁴

(In thousand hectares)

YEARS	AFFORESTATION OF SANDS	AFFORESTATION OF GULLIES	AFFORESTATION BETWEEN FIELDS	LAYING OUT OF PARKS	TOTAL
Total 1898-1917	191.9	10.5	..	...	202.4
" 1925-1929	91.8	6.7	2.2	..	100.7
" 1930-1934	83.1	53.4	37.0	18.2	196.7

The decree "Concerning the Measures for Securing Stable Crops in the Dry Regions of the Southeast of the Soviet Union" calls for further development of forest shelter belts and describes improved methods of planting and caring for trees.²⁵

TABLE 14. U.S.S.R.: NUMBER OF INDIVIDUALLY OPERATED PEASANT HOLDINGS²⁶

1916	21,008,000
1923	22,825,400
1924	23,459,300
1925	23,961,800
1926	23,579,000
1927	25,015,900
1928	25,614,100
1932	9,428,000
1935	3,500,000
1936	1,760,000
1938	1,500,000

Land Tenure: Within a little more than half a century Russia has experienced three agrarian reforms. In 1861 the serfs were liberated and 148 million hectares in European Russia were given to the villages, the *mir*s, while 89 million hectares were left in the possession of the landlords. Under the *mir* system the village was the owner of the land and it distributed the land periodically among the homesteads according to the size of the family. With the rapid increase of the village population the share of the individual family became smaller and smaller. In his agrarian reform of 1906, Stolypin took steps to abolish the *mir* system and to give the peasant full ownership of the land. The revolution of 1917 nationalized all land, that of the landlords and of the peasants alike, and between the years 1917 and 1920 the peasants divided the big estates of the landed aristocracy among themselves. For po-

²⁴ *Selskoe Khozyaistvo SSSR*, 1935.

²⁵ Volin, Lazar, "Effects of the Drought and Purge on the Agriculture of the Soviet Union," *Foreign Agriculture*, Vol. III, Washington, 1939, pp. 175-196.

²⁶ *The Land Tenure Systems in Europe*, League of Nations, European Conference on Rural Life No. 2, 1939, p. 42. See also the discussion of land tenure in the Soviet Union by Timoshenko in *Proceedings of the Fifth International Conference of Agricultural Economists*, London, 1939, pp. 160-168.

litical reasons the Communist Party allowed parcelling and general equalization, although it was always in favor of large-scale farming. In the decree "On the Socialistic Organization of Agricultural Production" of February 14, 1919, the party expressed its preference for large state farms (*sovkhosy*) and collective farms (*kolkhosy*), but it was impossible to enforce the program at that time. The Land Code of 1922 even recognized the *status quo* and assured the peasants the perpetual tenure of all the land in their possession. The Code also decreed that all land was state property and that purchase, sale and mortgage of land were forbidden. Up to 1928 the number of individually operating peasants increased considerably, as shown in Table 14.

TABLE 15. U.S.S.R.: PROCESS OF COLLECTIVIZATION²⁷

YEAR	NUMBER OF COLLECTIVES (In thousands)	PERCENTAGE OF COLLECTIVIZED HOUSEHOLDS	PERCENTAGE OF SOWN AREA UNDER COLLECTIVES (State farms excluded)
1928	33.3	1.7	2.3
1929	57.0	3.9	4.9
1930	85.8	23.6	33.6
1931	211.1	52.7	67.8
1932	211.1	61.5	77.6
1933	244.5	64.4	83.1
1934	233.3	71.4	87.4
1935	245.4	83.2	94.1
1936	245.7	88.4	98.0
1937	243.7	93.0	99.1
1938	242.4	93.5	99.3

The great agrarian revolution took place from 1928 to 1933, when the overwhelming majority of the peasants were forced to accept the new form of land tenure—the collective farm—and the kulaks were eliminated. Since then agriculture has been carried on in two types of enterprises, the great state farms and the collective farms, with the number of individually operated peasant farms becoming less and less.

A state farm or *sovkhos* is owned and managed entirely by the state with the help of hired labor. A collective farm or *kolkhos* is a peasant cooperative whose members till the land collectively. The state gives the *kolkhos* the land in usufruct, rent-free, without time-limit, i.e. in perpetuity (Article 8 of the Constitution of the U.S.S.R.). The *kolkhosy* are extensive farms, more than half of which have between 200 and 1,000 hectares. The average *kolkhos* includes 77 farmer peasant farms with 458 hectares of arable land and 163 working members.²⁸

A third type of collective farm, the most common and important, is the *artel*, in which land, livestock and implements are collective property. Each family has, in addition to its share in the *kolkhos*, its own small economy consisting of the farmstead and a plot of land of from one-fourth to one hectare, cattle, pigs, sheep or goats, and poultry.²⁹

²⁷ Quoted by Grajdanzev, *op. cit.*

²⁸ *The Land Tenure Systems in Europe*, League of Nations, European Conference on Rural Life No. 2, 1939, p. 42.

²⁹ In most regions each family is allowed one cow, two calves, one sow with sucklings, ten sheep or goats, an unlimited number of poultry and rabbits and twenty beehives. The figures for semi-nomads and nomads are different. See: Volin, Lazar, "The Russian Peasant Household under the Mir and the Collective Farm System," *Foreign Agriculture*, Vol. IV, 1940, pp. 133-146.

In the years 1928 and 1929 the process of collectivization was slow, but during the winter of 1929-30 the government speeded up the program, with the results shown in Table 15.

Some 26 million small subsistence farms (1928) were supplanted by 1937 by about 244 thousand good-sized collective farms. These farms are under the control and supervision of about five to nine thousand machine-tractor-stations (M.T.S.) which are government-owned and represent a powerful instrument of government control and planning in peasant collective agriculture. The M.T.S. took over all threshing machines with mechanical power in the possession of the collectives. Thereby the collectives became dependent on the M.T.S. for threshing, and the government, through the M.T.S., obtained better control over grain production.

Table 16 gives the distribution of crop area among the various economies and reveals the extent to which Russian agriculture has become collectivized. The land tilled by uncollectivized peasants amounts to less than 1% of the total crop area of the Union.

TABLE 16. U.S.S.R.: DISTRIBUTION OF CROP AREA BY CATEGORIES OF ECONOMIES, 1938⁸⁰
(In hectares)

State farms	...	...	12,410,800
Collective farms	...	...	117,227,000
Private economy of members of collective farms	...	...	5,337,000
Workers	...	...	1,112,600
Individual peasants (uncollectivized)	...	...	855,700
Total Crop Area	...	...	136,943,100

TABLE 17. U.S.S.R.: NUMBER OF AGRICULTURAL ENTERPRISES⁸¹

CLASSIFICATION	1928	1932	1935	1936	1938
State farm and similar enterprises (a)	3,125(b)	9,009(c)	8,982(d)	...	...
State farms only	1,407(b)	4,337(c)	4,118(d)	4,323(d)	3,961
Machine tractor stations	...	2,502(c)	4,376(c)	4,950(e)	6,358(c)
Collective farms (in thousands)	33.3(f)	211.1(f)	249.4(g)	244.5(h)	242.4(h)
Peasant households (in millions)					
In collectives	0.4(f)	15.1(f)	17.3(h)	18.4(h)	21.5(h)
Outside collectives	24.1(f)	9.4(f)	3.6(h)	2.0(h)	1.5(h)
Total peasant households	24.5(f)	24.5(t)	20.9(h)	20.4(h)	23.0(h)

(a) Including farms belonging to consumers' cooperatives and to organizations supplying workers with food (O.R.S.)

(b) Spring.

(c) Dec. 31.

(d) Jan. 1.

(e) Harvest.

(f) June 1.

(g) Oct. 1.

(h) July 1.

⁸⁰ *Posseyme Ploshadi V.S.R. v 1938g.*

⁸¹ Quoted by Timoshenko, V. P., "Soviet Agricultural Reorganization and the Bread-Grain Situation," *Wheat Studies*, Vol. XIII, 1937, p. 323.

2. MANCHURIA

A study of land utilization and land tenure conditions in Manchuria is hampered by the very limited value or complete nonexistence of the necessary statistics.

Until toward the end of the nineteenth century Manchuria had a sparse population largely dependent upon stock raising. In the course of the last 40 or more years the types of land use have changed rapidly and Manchuria has become an important producer of agricultural products. This change has resulted from large-scale immigration of Chinese peasants from North China, who have carried their methods of land utilization into the plains of Manchuria where the natural conditions are very similar to those of North China.

TABLE 18. MANCHURIA: AGRICULTURAL POTENTIALITIES¹

(In thousand hectares and percentages of regional totals)

EXCLUDING FOUR HINGAN PROVINCES

PROVINCES	TOTAL AREA	ARABLE						UNARABLE	
		Total		Cultivated		Not Yet Cultivated			
		Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Kirin	8,991	4,479	49.8	3,040	33.8	1,440	16.0	4,512	50.2
Lungkiang	12,564	8,316	66.2	2,101	16.7	6,215	49.5	4,248	33.8(a)
Heiho	10,981	1,106	10.1	54	0.5	1,052	9.6	9,876	89.9
Sankiang	10,754	5,277	49.1	752	7.0	4,525	42.1	5,477	50.9
Pinkiang	14,343	6,485	45.2	3,530	24.6	2,956	20.6	7,857	54.8
Mutankiang		417	14.2	166	5.6	251	8.6	2,522	85.8
Chientao	2,939	577	12.0	418	8.7	159	3.3	4,246	88.0
Antung	4,823	3,737	43.7	2,919	31.1	818	9.6	4,817	56.3
Tunghua		1,265	32.1	1,154	29.3	111	2.8	2,681	67.9
Fengtien	8,555	1,019	10.6	782	8.1	237	2.5	8,640	89.4
Chinchow	3,946								
Jehol	9,659								
Harbin Special Municipality	93	57	61.2	45	48.6	12	12.6	36	38.8
Total	87,647	32,736	37.3	14,960	17.1	17,775	20.2	54,912	62.7

FOUR HINGAN PROVINCES

PROVINCES	TOTAL AREA	AGRICULTURAL		PASTORAL		AGRICULTURAL PASTORAL		FORESTRY / ONI		WASTE LAND	
		Area	%	Area	%	Area	%	Area	%		
Eastern Hinggan	10,675	365	3.5	913	8.5	548	5.2	4,924	45.9	3,924	36.7
Southern "	7,902	760	9.6	1,520	19.3	2,165	27.5	950	12.0	2,507	31.6
Western "	8,041	715	8.8	1,789	22.2	1,074	13.3	109	1.4	4,352	54.0
Northern "	16,039	1,633	10.0	4,896	30.6	1,632	10.2	4,924	30.6	2,955	18.4
Total	42,657	3,472	8.1	9,116	21.4	5,419(a)	12.7(a)	10,908	25.5	13,739	32.3

(a) Editor's correction

Cultivated and Cultivable Area: Excluding the four Hsingan provinces, it has been estimated that 37.3% of Manchoukuo is arable. So far only 17.1% has been brought under cultivation so that 20.2% awaits the pioneer. The degree to which land may be cultivated varies considerably from province to province, depending mainly upon topographic conditions.

¹ *Japan-Manchoukuo Year Book*, 1940, p. 711

If the figures given in Table 18 represent the actual state of affairs, Manchuria could more than double its cultivated area.² In South Manchuria from 65 to 95% of the arable land is already developed. In districts with ample transportation facilities all cultivable land is under crop. Over 80% of the arable but uncultivated land lies in North Manchuria, especially in Lungkiang, Peian, (Peian was separated from Lungkiang in April 1939), Sankiang, and Tungan (until April 1939 Tungan was a part of Mutankiang). The agricultural value of these northern areas is supposed, because of climatic and soil conditions, to be lower than that of the tracts of the Central Manchurian Plains. A good deal of the land is forested and would have to be cleared before it could produce the first crops; furthermore it is still inaccessible because of lack of railroads.

TABLE 19. MANCHURIA: DISTRIBUTION OF CROP ACREAGE³
(In thousand hectares and percentages of total area)

CROPS	1925-29 AVERAGE		1930-34 AVERAGE		1935		1938	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Soybeans	3,475	28.9	3,937	29.9	3,249	26.3	3,783	25.0
Other beans	413	3.4	354	2.7	330	2.7	408	2.7
Kaoliang	2,702	22.5	2,827	21.5	2,765	22.4	3,372	22.3
Millet	2,055	17.1	2,235	17.0	2,395	19.4	3,144	20.8
Maize	1,074	8.9	1,052	8.0	1,236	10.0	1,611	10.6
Wheat	1,106	9.2	1,336	10.1	980	7.9	1,143	7.6
Rice	213	1.8	191	1.5	234	1.9	351	2.3
Other crops	989	8.2	1,237	9.4	1,161	9.4	1,324	8.7
Total	12,027	100.0	13,169	100.0	12,349	100.0	15,136	100.0

Crop Area: In some regions of the world the cultivated area and the crop area may differ considerably from one another either because of fallowing or of double cropping. The area under fallow is considerable in size in countries practicing the Western type of agriculture, while double or multiple cropping is very common in countries with the Oriental type of agriculture, provided that climatic conditions allow such an intensive form of land use. Manchurian agriculture is mainly in the hands of Chinese peasants who seldom allow land to lie fallow, but the climate hardly permits the growing of two crops. Each year about 95% of the cultivated area is under crops, according to studies by Yashnov, Surin, Konstantinov and others, but double cropping is practically nonexistent.

The leading crops of Manchuria are soybeans, kaoliang, millet, maize, wheat and rice. Table 19 shows that the chief product of Manchuria is grain; technical crops, such as perilla, cotton, hemp and tobacco, and vegetables, account for only about 6% of the crop area. Manchurian crops can be classified in two groups, produce grown mainly for export

² For studies of North and East Hungan see Yashnov, F. E., *Kitaiskaya kolonizatsiya Severnoy Manchurii i ee perspektivy* (Chinese Colonization in Northern Manchuria and Its Prospects), Chinese Eastern Railway, Harbin, 1928.

³ *Japan-Manchoukwo Year Book*, 1939, p. 759.

and that grown for home consumption. North Manchuria goes in largely for export crops, soybeans and wheat, which account for an average of 48% of the area under crops, while South Manchuria has an average of only 27% of its crop area under soybeans and wheat and about 55% under kaoliang, millet and maize, which are mostly consumed domestically. This difference between the north and the south is said to be due to the difference in the size of the farms. South Manchuria is relatively densely settled, with small farms, while the north has large farms producing mainly for export.⁴

Forest Area: The Manchoukuo Department of Industry has estimated that Manchuria has 35,631,000 hectares of forest area, practically all of which lies in the north and east, especially in the Great and Little Khingan Mountains, in Sankiang, Mutankiang and Chientao. In area the Manchurian forests surpass those of Korea and Japan. The larger part of these forests are still remote from any means of transportation. In 1932 North Manchuria supplied 23% of the country's timber production; more recently its share has increased to 42%. The Yalu River area has declined correspondingly as a timber producer.

TABLE 20. MANCHURIA: CLASSIFICATION OF LAND TAX PAYERS, 1934⁵

AREA IN HECTARES	NUMBER OF TAX PAYERS	PER CENT OF TOTAL
61.5 hectares or more	16,476	0.3
From 6.2 hectares to 61.5 hectares	608,493	11.3
From 1.23 " to 6.2 "	1,343,483	25.0
Less than 1.23 hectares	1,909,436	35.5
No land (a)	1,500,000	27.9
Total	5,377,888	100.0

(a) The number of those without land was determined by subtracting the number of land owning tax payers from the total number of families engaged in agriculture

Land Tenure: Our knowledge of land tenure conditions in Manchuria is very scant for we have to rely more or less on estimates. The rural population of Manchuria is supposed to include 90% of the entire population—33,300,000 in 1934. Eighty-five per cent of the rural population, or about 28,300,000, are actually engaged in agriculture. This farming population falls into two major groups, land owning and landless. The latter consists of the farm-laborers and tenants. There is reason to estimate that about 1,800,000 of the farming population are farm-laborers and their dependents, so that there are about 5,400,000 farms with a population of 26,500,000 people. These 5,400,000 farms have about 15,000,000 hectares under cultivation. The average size of the crop land of a farm would be 2.8 hectares if the crop land were more or less equally divided. From statistics on land taxes we know, however, that the land is very unevenly distributed and that a very

⁴ "Survey of Manchurian Agriculture," *Contemporary Manchuria*, Vol. 2, Oct. 1938, pp. 40-41.

⁵ *Manchu Keizainempo*, 1937, Vol. II, p. 204.

large number of the Manchurian peasants till much less than 2.8 hectares, while a large number own no land at all but till only rented land.

According to Table 20 about 28% of the peasants are tenants; 35.5% are semi-tenants or tenant owners (a plot of less than 1.23 hectares is not large enough for a family, and its owner is forced to rent additional land); and 36.6% are owners, i.e. 25% small owners, 11.3% well-to-do owners and 0.3% large landlords. These figures are of course only rough estimates. Yashnov estimated in 1935 that the tenant group amounted to 29%, semi-tenants to 27%, and owners to 44%.⁶

The *Japan-Manchoukuo Year Book* mentions that tenants represent about 30% of the entire farming population, and that tenants together with semi-tenants account for approximately half the Manchurian farmers.

Most of the tenants are share croppers. The rent ranges from 40 to 60% of the crop, depending upon the value of the land and the terms under which the tenant rents. The landlords of North Manchuria usually provide the tenants with board, seeds, cattle and whatever else they need, and receive in return 70% of the crop.⁷ Thus "the social standing of the Manchurian tenant-farmer is steadily declining. Nowadays, land-rents evidently are not land-rents in the strict sense, they being figured out so as to devolve upon the tenant a considerable portion of the burdens that should be borne by the landlords."⁸

As long as the major portion of the crop goes to the landlords, the income of a large part of the peasants is so small that capital accumulation and farm improvements are almost impossible." The *Japan-Manchoukuo Year Book* states that the "tenancy system smacking strongly of feudalism inevitably accelerates a retrogression of farming technique."¹⁰

⁶ Yashnov, I. I., *Ocherki Kitaiskogo Krest'yanskogo Khozyaystva*, Harbin, 1935.

⁷ *Japan-Manchoukuo Year Book*, 1939, p. 755.

⁸ *Ibid.*, p. 755.

⁹ Ladetskiy, W., "Agriculture in Manchuria Possibilities for Expansion," *Foreign Agriculture*, Vol. I, No. 4, April 1937, p. 164.

¹⁰ *Op. cit.*, p. 757.

3. CHINA

Land Utilization: The following discussion of land utilization rests heavily upon the studies of John Lossing Buck¹ and his associates. The method used by Professor Buck was the survey method, the only method possible in China, where census surveys are still lacking. Most of the data were obtained by field studies and farm questionnaires from 168 localities scattered over 22 provinces. The localities chosen were so distributed that all major types of farming in China were covered. Excluded from the study are Manchuria, Outer Mongolia, Tibet, Sinkiang and the provinces on the borders of "Agricultural China"² in the north and in the west.

¹ Buck, John Lossing, *Chinese Farm Economy*, Chicago, 1930, and Buck, John Lossing, *Land Utilization in China*, Chicago, 1937. See also Cressy, George R., *China's Geographic Foundations*, New York, 1934; Tawney, Richard Henry, *Land and Labour in China*, New York, 1932; Thorp, James, *Geography of the Soils of China*, Nanking, 1936; and Wittogel, K. A., *Wirtschaft und Gesellschaft Chinas*, Schriften des Instituts für Sozialforschung an der Universität Frankfurt a. M., III Bd. Leipzig, 1931. For further references on land problems of China see Fong, H. D., "Bibliography on the Land Problems of China," *Nankai Social and Economic Quarterly*, Vol. VIII, 1935, pp. 325-384.

² Parts of Chahar, Suiyuan, Ningxia, Tsinghai, Kansu, Shensi, Szechwan, Sinking and Yunnan, or 836,465 square miles, are excluded from "Agricultural China."

The gross area of "Agricultural China" considered in the study amounts to about 1,359,000 square miles, of which about 340,000 square miles or one-fourth is cultivated. "The other three fourths of the gross area not cultivated has a little over one half in some kind of productive use—chiefly in trees, grass and reeds for fuel—but over one fifth is in forest and 12% in pasture. The arable portion of this uncultivated land is estimated to be over one tenth, but that estimate does not give sufficient consideration to the profitability of cultivating such land or to the length of time it can be cultivated with profit. Much of this supposedly arable land has had the top soil washed away by sheet erosion and is therefore difficult to bring to profitable production."³

"Of all land, 27% is utilized for crops, 4.6% for pasture, 8.7% for forest, and the remaining 59.7% is for other purposes or is valueless."⁴ The percentage of land under cultivation compares favorably with such countries as Great Britain, Russia or the United States. However, the density of farm population per unit of crop area, estimated by Buck as 1,500 per square mile, is so high that the area of cultivated land in agricultural China per head of the farming population (which represents about 75 to 80% of the total population) amounts to only 0.25 hectare or 0.62 acre. The area per head of the total population probably does not exceed 0.19 hectare or 0.47 acre.

Whereas most Western countries use a large percentage of their land for grazing purposes, China utilizes a remarkably small percentage of its land for pasture. This points to one of the outstanding differences between Chinese, or Oriental, and Western agriculture, which is found in the size of the animal industry. The Chinese farmer is a cultivator and not a dairyman or grazier. Although he has been familiar with cattle for several thousand years, according to anthropologists, and has been in contact with nomads who depend largely on milk and dairy products, he has never milked his cows or other livestock.⁵ Cattle supply the farmer with draft animals, but not with meat, milk or other dairy products. Buddhism, which has a large following in China, forbids the eating of beef. This might explain at least partly the preference of the Chinese for pork and fowl, which is characteristic of people having a hoe-culture.⁶

Other observers claim that the Chinese farmer depends so largely upon plant products because he cannot afford the circuitous way of feeding animals and consuming animal products, but has to produce for direct consumption. Whatever the reason, "the Chinese diet comes almost entirely from vegetarian sources in contrast to the American diet with its large percentage of calories from animal products."⁷ Seed products account for 91.8% of the calories in the Chinese farm diet compared

³ Buck, J. L., *Land Utilization in China*, Chicago, 1937, pp. 5-6.

⁴ *Ibid.*, p. 6.

⁵ Wilmanns, Wolfgang, "Die Landwirtschaft Chinas," *Berichte über Landwirtschaft*, N.F. Sonderheft 133, Berlin, 1938, p. 43.

⁶ Anthropologists call the Chinese agriculture an "intensified hoe-culture" or "horticulture" because of the intensive use of hand labor for planting, cultivating and harvesting beside which animal labor takes second place and is generally only used for plowing and harrowing.

⁷ Buck, J. L., *Land Utilization in China*, p. 414. See also Lindstedt, H., "Food Consumption Habits in China," *International Review of Agriculture*, Year XXX, 1939, pp. 363E-389E.

with 38.2% in an average American diet, animal products 2.3% (39.2% in the American diet), vegetables 5.2% (9.0%), sugar 0.5% (10.1%), fruits 0.2% (3.0%).

The area under forests in China is very small—a result of deforestation in Central and South China, where forests formed the original vegetation. A good deal of the deforestation was due to cultivation on the hill and mountain slopes, which led to sheet and gully erosion so that large parts of China are badly denuded and the vegetation has been reduced to coarse grasses.

The types of land use are conditioned not only by topographic, climatic and soil factors but also by the racial composition of the people in the different parts of China. "The 'Sinification' of the older indigenous tribes in the South and of the invading ethnic groups in the North and West has been by no means as complete as some writers claim. Turki, Mongolians and Tibetans in the northwest raise and consume more animal products than do the Chinese, even in areas where there is just as forceful an argument for a greater animal industry. Tribes in the southwest raise corn in the mountains while the Chinese raise rice in the valleys. Topographical differences no doubt account for this to some extent. But the freedom of the invading group, in each case, to select the sites for its settlement in accordance with the suitability of the land for the type of agriculture to which it was accustomed, probably explains these differences seemingly due to topography. . . . The influence of racial custom, at least, cannot be eliminated from any study of land use, and it may be greater than is generally surmised."⁸

Agricultural Regions: Agricultural China can be divided into two major agricultural regions, the Wheat Region and the Rice Region; the boundary between the two lies about latitude 32°-33°N, that is north of the Yangtze River. Wheat is the outstanding crop north of the boundary and rice dominates in the south. The two major agricultural regions have been divided by Buck into eight agricultural areas: the Spring Wheat Area, the Winter Wheat-Millet Area, the Winter Wheat-Kaoliang Area, the Yangtze Rice-Wheat Area, the Rice-Tea Area, the Szechwan Rice Area, the Double-Cropping Rice Area and the South-western Rice Area. "The boundaries of these regions and areas were determined by basic factors mostly physical, by factors affecting type of land use, and by factors affecting the success of land use."⁹

The great plain, a part of the Wheat Region, is responsible for the fact that this region contains nearly one-half of the cultivated area although it includes only about one-third of the grass area of agricultural China. Land under cultivation occupies 39% of the Wheat Region, compared with 18% in the Rice Region, the greater part of which is very mountainous country. The Rice Region thus claims only a little less than one-half of the cultivated area but two-thirds of the grass area.

Table 21 illustrates land use conditions in the various agricultural areas, the distribution of the cultivated land of China and its share in each area.

⁸ Buck, *Land Utilization in China*, pp. 4-5.

⁹ *Ibid.*, p. 24.

TABLE 21. CHINA: LAND UTILIZATION IN THE DIFFERENT AGRICULTURAL AREAS¹⁰

REGIONS AND AREAS	GROSS AREA		CULTIVATED AREA		PER CENT OF THE TOTAL CULTIVATED LAND IN EACH REGION OR AREA	PER CENT OF PRODUCTIVE LAND TO ALL UNCULTIVATED LAND AREA	PRODUCTIVE ¹ UNCULTIVATED LAND AND ITS USES						
	Square miles	Square miles	Square miles	Per cent of Productive Uncultivated Land Growing			Per cent of Pro- ductive Land to All Uncultivated Land Area	Per cent of Productive Uncultivated Land Growing					
				Forest				Trees & Bushes	Grass	Reeds	Pasture	Other Use	
China	1,358,905 (a)		339,644		100	25	52.5	22.8	28.1	23.8	5.2	11.9	8.2
Wheat Region	445,174		172,916		51	39	38.0	21.4	26.5	19.8	7.7	14.7	9.9
Rice Region	913,731		166,728		49	18	62.1	23.6	29.1	26.3	3.6	10.2	7.2
Wheat Region Areas													
Spring Wheat	123,119		22,054		7	18	43.1	13.4	17.2	14.0	(b)	33.2	22.2
Winter Wheat-Millet	146,609		31,869		9	22	23.8	29.5	23.7	25.0	10.4	7.3	4.1
Winter Wheat-Kaoliang	175,446		118,993		35	68	44.8	18.5	31.9	18.3	8.5	13.2	9.6
Rice Region Areas													
Yangtze Rice-Wheat	115,919		40,328		12	35	62.7	11.6	19.2	18.8	7.0	25.6	17.8
Rice-Tea	242,374		42,624		12	18	68.3	22.4	34.2	31.7	1.9	4.4	5.4
Szechwan Rice	149,835		47,579		14	32	41.7	53.1	31.2	4.2	(b)	2.3	8.8
Double-Cropping Rice	148,710		19,155		6	13	68.0	18.0	28.7	45.6	0.5	6.5	0.7
Southwestern Rice	256,893		17,042		5	7	63.3	13.4	28.2	27.3	11.0	17.8	2.3

(a) For the eight agricultural areas only

(b) The amount is under 0.5

10 *Ibid.*, p. 33

While the Wheat Region is adapted to a number of crops—as shown in the fact that wheat takes 40% of the crop area, millet 27%, kaoliang 15% and cotton 8%—the Rice Region type of farming is represented by a single crop only—rice, which occupies 68% of the crop area for the Rice Regions as a whole and as much as 90% of the crop area in the Double-Cropping Rice Area.

Crop Area: In China “crops are grown primarily for food for direct human utilization and only a small proportion is used for feed in the production of animal products; nearly all crops are cultivated since hay is not produced for fodder; crop by-products are utilized to a large extent for fuel; and a large proportion of the crop area is double-cropped each year.”¹¹

The most important crops are wheat, rice, barley, millet, kaoliang, corn, field peas, broad beans, soybeans, rapeseed, sweet potatoes and cotton. Since 1931 the Bureau of Statistics, Legislative Yuan of China, and later the National Agricultural Research Bureau of the Department of Agricultural Economics, Ministry of Industries, have published crop reports for China. These crop statistics are only rough estimates.

TABLE 22. CHINA: AREA UNDER THE MOST IMPORTANT CROPS¹²
(In thousand hectares)

CROP	AVERAGE 1931-1934	1935	1936	1937
Wheat	19,873	20,807	20,369	17,246
Rice	17,862	18,600	18,149	(18,149)
Barley	6,597	6,652	6,540	5,957
Millet	5,418	(5,418)	(5,418)	(5,418)
Proso-millet	1,544	(1,544)	(1,544)	(1,544)
Kaoliang	5,236	(5,236)	(5,236)	(5,236)
Corn (maize)	4,480 (a)	4,711	4,656	(4,656)
Oats	971 (a)	1,088	1,063	983
Field peas	3,472 (a)	(3,472)	(3,472)	(3,472)
Broad beans	2,645 (a)	(2,645)	(2,645)	(2,645)
Soybeans	2,146	5,158	4,922	(4,922)
Peanuts	1,498 (a)	1,340	1,406	(1,406)
Sesame	1,492 (a)	1,341	1,422	(1,422)
Rapeseed	3,950	3,781	3,928	(3,928)
Sweet potatoes	2,146	(2,146)	(2,146)	(2,146)
Cotton	3,629	2,152 (a)	3,454 (a)	4,550 (a)
Tobacco	525 (a)	548	550	(550)
Potatoes	(337)	337	353	(353)
Total	(83,821)	(86,976)	(87,273)	(84,583)

(a) Estimates of the Chinese Cotton Statistics Association.

The crops given in Table 22 are supposed to occupy about 90% of the “crop acre” area, so that the total crop acre area of China would be about 95 to 99 million hectares. These figures fall considerably below

¹¹ *Ibid.*, p. 204.

¹² Figures in brackets are data for the next year for which they are available. All figures exclude Kwangai. Figures for 1931-34 are from *Crop Reporting in China*, for 1935, 1936, 1937 from *International Yearbook of Agricultural Statistics*.

TABLE 23 CHINA · PERCENTAGE OF THE TOTAL CROP ACRE AREA DEVOTED
TO VARIOUS GROUPS OF CROPS¹³
(16,416 farms, 164 localities, 111 hsten, 22 provinces, 1929-1933)

REGIONS AND AREAS	NUMBER OF LOCA- LITIES	GRAINS	LEGUMES	OIL SEEDS	GRAINS & LEGUMES	GRAINS & OIL SEEDS	LEGUMES & OIL SEEDS	GRAINS, LEGUMES, & OIL SEEDS	ALL SEEDS	FIBERS	TUBERS & ROOTS	FRUITS	VEGE- TABLES	TREES	OTHER CROPS	Un- KNOWN	TOTAL
China	164	68.5	9.9	3.6	2.9	0.3	0.2	(a)	85.4	3.6	3.3	0.9	1.1	1.1	4.4	0.2	100
Wheat Region	71	68.2	13.0	2.1	4.8	0.2	0.1	(a)	88.4	3.8	3.1	1.3	1.2	(a)	1.7	0.5	100
Rice Region	93	68.7	7.6	4.7	1.4	0.4	0.4	(a)	83.2	3.5	3.5	0.5	1.1	1.7	6.4	0.1	100
Wheat Region Areas																	
Spring Wheat	13	76.0	11.1	2.3	0.4	0.9	0.1	0	90.7	0.2	3.8	0	0.7	0	4.2	0.4	100
Winter Wheat	20	69.0	9.2	0.5	4.2	(a)	(a)	0	87.9	5.0	1.6	0.9	2.4	(a)	1.9	0.3	100
Winter Wheat Kaoliang	38	65.1	15	3.0	3.9	0.1	(a)	0.1	87.9	4.3	3.6	2.0	0.8	0.1	0.8	0.5	100
Rice Region Areas																	
Yangtze Rice Wheat	34	69.7	8.2	4.1	0.9	(a)	0.8	(a)	83.7	7.9	1.1	(a)	0.7	3.2	3.3	0.1	100
Rice Tea	27	70.1	8.2	6.5	0.1	(a)	(a)	(a)	84.9	1.0	3.1	0.2	1.4	1.7	7.6	0.1	100
Szechuan Rice	8	59.4	10.3	5.9	3.4	0	0	0	79.5	3.1	7.4	0	1.9	0	8.0	0.1	100
Double-Cropping Rice	12	72.8	1.8	5.2	0	0	0	0	79.8	(a)	10.6	3.3	1.6	0.5	4.0	0.2	100
Southwestern Rice	12	65.1	8.0	1.0	5.8	3.2	0.5	0	83.6	0.1	1.5	0.3	0.6	0.1	13.8	(a)	100

(a) The amount is under 0.05

¹³ Buck, *Land Utilization*, p 209

the estimates of the crop acre area of China by Professor Buck, who calculates that 217,000,000 acres or 87,798,200 hectares are under cultivation. In order to get the crop acre area, we have to multiply the crop area with the index of multiple cropping of China, which according to Professor Buck is 149, so that the crop acre area would be about 131 million hectares. It is of course impossible to say which estimate comes closer to the truth.

Studying the trend of crop acreages in the last thirty years, Professor Buck found that such crops as barley, kaoliang and millet show a definite decrease in acreage, while corn, cotton, rapeseed, sesame and sweet potatoes, crops which either produce a large amount of food per unit of land or can be exported, have increased their acreages. Rice and wheat have kept their share of the crop acreage.

Cereals occupy nearly 70% of the crop acre area of China; cereals, legumes and oil seeds together account for 85% of the crop acre area; fibers constitute 3.6%, tubers and roots 3.3%, vegetables 1.1%, tree crops 1.1%, fruits 0.9% and all other crops 4.4%. The above figures refer to China as a whole; Table 23 gives details for the various areas.

In China, as in all Oriental countries, we distinguish between irrigated and unirrigated land. According to Buck's studies, taking agricultural China as a whole, 46% of the cultivated land is irrigated. There is a considerable difference between the Wheat and the Rice Regions. In the former only 15% of the crop area is irrigated; in the latter, however, the proportion is 69%, which shows the great importance of irrigation in the Rice Region.¹⁴ No estimates of the potentially irrigable area are available.

TABLE 24. CHINA: INDEX OF DOUBLE CROPPING¹⁵
(16,456 farms, 164 localities, 151 hsen, 22 provinces, 1929-1933)

	AVERAGE
China	149
Wheat Region	127
Rice Region	166
Wheat Region Areas	
Spring Wheat	107
Winter Wheat-Millet	118
Winter Wheat-Kaoliang	139
Rice Region Areas	
Yangtze Rice-Wheat	165
Rice-Tea	169
Szechwan Rice	167
Double-Cropping Rice	176
Southwestern Rice	152

There is very little land lying fallow in Chinese farms, an indication of the very intensive use of land. Only 1.2% of the crop area of the farms surveyed by Professor Buck's associates was found to be idle; in the Wheat Region the percentage was 2.4, but only 0.3 in the Rice Region.

Double cropping is a very important feature in Chinese farm economy. The extent of double cropping depends of course primarily

¹⁴ For detailed figures, see *ibid.*, p. 232.

¹⁵ *Ibid.*, p. 216.

upon climatic conditions, i.e. the length of the growing season and the possibility of growing a winter crop maturing early enough to give place to a summer crop. In some cases even three crops can be harvested within a year on the same field. This, however, is limited to the Rice Region, with the exception of the Southwestern Rice Area. In the Wheat Region 27% of the crop area is double cropped, in the Rice Region 66%, while the percentage for China as a whole is 49%, according to Buck's survey.

Cultivable Area: In a country with such a high population pressure and such a scarcity of crop land as China, the most vital question is the possibility of enlarging the area under cultivation. Although only 25 to 27% of agricultural China is cultivated, the peasants make use in one form or another of more than one-half of the uncultivated area—it supplies them above all with fuel, the great problem in Chinese farm households. Most of the uncultivated area is entirely unfit for agriculture. Professor Buck estimates that all improvements, including the removal of graves, the consolidation of parcelled holdings and the profitable cultivation of arable land not now cultivated, would probably make available at most 23 million acres or 9.3 million hectares, i.e. an additional 10% of the crop area.

Yashnov, a Russian writer on Chinese agricultural conditions, in his *Essays on Chinese Peasant Economy*, 1935, states “if with the acute shortage of land and its high prices the Chinese peasant was not able to increase the sown area, it is, evidently, only the result of unsurmountable obstacles.” And he adds “apparently putting lands, now not used, under the plough would demand technical, organizational and material premises which now are lacking, a considerable part of these lands, one may suppose, in general is unsuited for agriculture.”

Characteristics of Chinese Agriculture: About 90% of the Chinese farm land is used for the raising of crops (compared with 42% in the United States), about 4% is under roads, ponds, graves etc., over 3% is occupied by farmsteads, over 1% is in pasture and wooded pasture (compared with 47% in the United States), 1% is in forest, over 0.5% in grass and bushes used for fuel, and 0.3% in ponds supplying water crops or fish.

The average Chinese farm household has 6.2 persons who live on an average of 4.18 acres of land, whereas the average American farm family of 4.2 persons operates a 157-acre farm.

A high degree of parcellization is characteristic of Chinese agriculture. The average number of parcels is 5.6 per farm and their average size is 0.94 acres.¹⁶ Some of the disadvantages of this situation are obvious. The boundaries take up land, the farmers have to spend a lot of time reaching their plots, irrigation is difficult. The main advantage lies in the fact that each peasant has land of different qualities which might prevent complete crop failure.

Chinese peasants on the whole are concentrated in the valleys and in the flood plains of the great rivers, and Chinese agriculture has always been most important in the river valleys; this is true for both the north

¹⁶ *Ibid.*, p. 181

and the south. Only in the loess regions, in Szechwan and in scattered parts of South China are there hill lands that are cultivated permanently. In other areas the peasants "have made repeated assaults on the hill lands, clearing away the trees or plowing up the sod, only to be driven back to the valley again by soil erosion."¹⁷

Very characteristic is the large amount of human labor used on each acre of crops. A comparison between man labor requirements in China and in the United States shows this very clearly. One acre of cotton requires 53 days of man labor in China, but only 14 days in the United States; one acre of corn in China needs 23 days' labor compared with 2.5 in the United States; one acre of winter wheat, 26 days compared with 1.2 in the United States, the rice labor requirements are 93.6 days in China compared with 3.1 days in the United States.

In spite of the most intensive use of human labor, however, Chinese agriculture does not produce such high yields as is frequently claimed. "China's yields are better than those of India or Russia, not as high as those of Japan, and, with the exception of rice, are less favorable than in other countries such as Italy, Germany, Great Britain and the United States. It is evident, therefore, that even in China, where farming is supposed to be intensive, there is considerable opportunity for increasing the yield by the use of improved seeds, better care of crops, more fertilization, the control of insect pests and disease, and by irrigation and drainage."¹⁸

Land Tenure Land Ownership Professor Buck found that 93% of the farm land in China is privately owned, while only 1% is public land.

TABLE 25 CHINA CLASSIFICATION OF LAND OWNERSHIP¹⁹

REGION	NUMBER OF HSIEN	PERCENTAGE OF LAND BY EACH TYPE OF OWNERSHIP							
		Private	Govt	School	Temple	Ancestral	Soldiers	Charity	Other
China	111	93.3	1.0	0.7	1.8	0.4	2.3	0.1	0.4
Wheat Region	53	93.5	0.9	0.7	2.2	(a)	2.1	0.1	0.5
Rice Region	58	93.2	1.1	0.8	1.5	0.8	2.4	(a)	0.2

(a) The amount is under 0.05

It has to be kept in mind that Table 25 refers to cultivated land only. In China public lands are chiefly mountainous and forested areas. Thus the proportion of government land is considerably larger if we take the total land area. Yashnov estimates it at 8%, but even that figure may be an underestimate.

Size of Land Holdings There are no statistics on the size of land holdings. Professor Buck states: "Some of this privately owned land, which is held in large amounts by single landholders and leased to farmers, constitutes one of China's important problems, though the magnitude of this is sometimes over-estimated. Somewhat less than three-fourths of the farm land is owned by the farmer himself and over

¹⁷ *Ibid.*, p. 159

¹⁸ *Ibid.*, p. 223

¹⁹ *Ibid.*, p. 194

one-fourth is rented."²⁰ Ownership is more prevalent in the Wheat Region, where seven-eighths of the farm land is worked by owners, in comparison with three-fifths in the Rice Region.

From Chen Han-seng we learn that in some districts of Kwangtung the average land holding of the landlords is $6\frac{1}{2}$ times larger than the average land holding of the peasants.²¹

Proportion of Ownership and Tenancy: In Buck's study we find three estimates on the proportion of ownership, part ownership and tenancy. It is believed by some that the "Agricultural Survey" estimates, given in Table 26, come closest to the actual conditions, while Buck prefers the estimates of the "Farm Survey" which included 16,786 farms, 168 localities and 154 hsien in 22 provinces, for the years 1929 to 1933.

TABLE 26. CHINA: PERCENTAGE OF FARMERS WHO ARE OWNERS, PART OWNERS AND TENANTS²²

REGION	FARM SURVEY (a)			AGRICULTURAL SURVEY (b)		
	Owners	Part Owners	Tenants	Owners	Part Owners	Tenants
China	54	29	17	44	23	33
Wheat Region	76	18	6	65	18	17
Rice Region	38	37	25	27	27	46

(a) According to data from the farm survey where farmers who own their farmstead but who rent all their crop land are classified as tenants rather than as part owners.

(b) According to data from estimates obtained in Agricultural Survey schedules, 236 localities, 146 hsien, 20 provinces.

Conditions of tenancy vary widely even within one district, as illustrated by Chen Han-seng in Table 27.

TABLE 27. CHINA: PERCENTAGE OF CULTIVATED LAND AREA LEASED BY PEASANTS FROM RESIDENT PRIVATE LANDLORDS. (TEN REPRESENTATIVE VILLAGES IN THE DISTRICT OF PAN-YU, KWANGTUNG, 1933.)²³

VILLAGE	PERCENTAGE OF CULTIVATED AREA LEASED
Mei-tien	84.0
Nan-pu	80.2
Kang-sin	76.4
Sha-dien-kang	76.2
Ting-lung-fong	63.3
Pei-shan	61.6
Huang-pien	60.2
Kiu-tseng	55.2
Kwei-tien	39.6
Lung-tien	34.8
Average	68.4

²⁰ *Ibid.*, p. 194.

²¹ Chen Han-seng, *Landlord and Peasant in China*, New York, 1936.

²² Buck, *Land Utilization in China*, p. 196.

²³ Chen Han-seng, *op. cit.*, p. 19.

Tenancy is especially frequent on the most productive lands. Thus it is higher in the south than in the north of China.

The amount of rent the Chinese tenant pays varies according to the region and the type of renting system. The rates of the rent are generally considered high. From 25 to 66% of the total crop goes to the landlord.²⁴ The share depends upon what the landlord furnishes. The highest rates are paid if he gives both seed and fertilizer. The most common sharecrop rent is 50% of the crop.

Questions of tenancy have attracted the special attention of many students of Chinese affairs. The Kuomintang has proposed measures for making land available for peasants through reclamation of waste land and the reduction of rent rates by 25%. Such a reduction would go a long way to alleviate the heavy burden of the Chinese tenant whose desperate struggle in Kwangtung is best described by Chen Han-seng in his study *Landlord and Peasant in China*.²⁵

Size of the Agricultural Units: The size of farms is closely associated with the density of population. The density of population in relation to the area under cultivation is very high and land is scarce, so that the size of the farms is very small. The farms of owners are slightly larger than those of tenants, being 4.22 acres compared with 3.56, for all of China. The Wheat Region has larger farms than the Rice Region, but this difference is compensated for by the greater possibilities of double cropping in the latter. For detailed figures see Table 28.

TABLE 28. CHINA · SIZE OF FARMS BY OWNERSHIP²⁶
(16,786 farms, 168 localities, 154 hsien, 22 provinces, 1929-1933)

REGIONS AND AREAS	NUMBER OF LOCALITIES	SIZE OF FARM (acres)					
		Owners	Part Owners			Tenants	All Farms
			Owned	Rented	Owned and Rented		
China	168	4.22	2.45	1.80	4.25	3.56	4.17
Wheat Region	71	5.56	3.41	2.15	5.56	5.06	5.63
Rice Region	97	3.19	1.75	1.53	3.29	2.74	3.09
Wheat Region Areas:							
Spring Wheat	13	8.40	4.42	2.59	7.01	4.27	8.03
Winter Wheat-Millet	20	4.17	2.91	1.38	4.30	3.19	4.22
Winter Wheat-Kaoliang	38	5.34	3.33	2.40	5.73	6.40	5.56
Rice Region Areas:							
Yangtze Rice-Wheat	38	3.95	2.15	1.68	3.83	3.36	3.85
Rice-Tea	27	2.57	1.33	1.28	2.62	2.07	2.47
Szechwan Rice	8	3.41	2.07	2.57	4.64	3.24	3.53
Double-Cropping Rice	12	2.59	1.19	1.24	2.42	2.05	2.37
Southwestern Rice	12	2.57	1.75	1.14	2.89	2.30	2.54

²⁴ Buck, J. L., *Chinese Farm Economy*, Chicago, 1930, p. 148.

²⁵ See also Chen Han-seng, *The Present Agrarian Problem in China*, China Institute of Pacific Relations, 1933.

²⁶ Buck, *Land Utilization*, p. 197.

4. JAPAN

Japan proper is in a very unfavorable position in regard to land utilization. Only about 20% of the total area is considered arable and 15.8% is already under cultivation. This ratio is very small in comparison with other countries. Great Britain cultivates 22.5% of her total area, France 39%, Italy 44.6%, Germany 43.8% and even the United States, a considerable portion of whose arable land is not yet in use, has 22.6% of her total area under cultivation. This unfavorable ratio arises from the fact that Japan is a very mountainous country. Not only the plains but also the lower slopes of hills and mountains are already under cultivation. Wherever the slopes have been terraced they are covered with permanent fields. Where terracing has so far not been possible but land is scarce the peasants burn forest or brush land, cultivate it for several years, and then let it revert to nature. This extensive form of land utilization, shifting cultivation or "fire farming," as Alsberg calls it,¹ is found especially in the mountains along the Sea of Japan, Central Japan and the islands of Shikoku and Kyushu.²

The major forms of land utilization in Japan are set forth in Table 29.

TABLE 29 JAPAN · LAND USE, 1909-1936³
(In thousand hectares and percentages of total area)

TYPE OF USE	1909 13 AVERAGE		1925 29 AVERAGE		1930 34 AVERAGE		1935		1936		1937
	Area	%	Area	%	Area	%	Area	%	Area	%	
Cultivated area	5,218	13.6	5,992	15.7	5,936	15.5	6,009	15.7	6,036	15.8	6,048
Tree and bush crops	510	1.3	667	1.7	727	1.9	646	1.7	632	1.7	627
Meadows and pastures							3,251	8.5	3,326	8.7	3,326
Uncultivated productive land							1,773	4.6	1,789	4.7	1,805
Land occupied by buildings etc.	377	1.0	409	1.1	439	1.1	456	1.2	460	1.2	
Salt pits	7	0.0	6	0.0	5	0.0	6	0.0	6	0.0	
Rivers and lakes	332	0.9	332	0.9	332	0.9	332	0.9	332	0.9	
Forests	19,962	52.2	11,467	50.9	20,158	52.7	20,576	53.8	20,862	54.5	20,862
Total area considered	26,406	63.0	26,873	70.3	27,597	72.1	33,049	86.4	33,443	87.4	
Unspecified area	11,849	31.0	11,382	29.7	10,656	27.9	5,206	13.6	4,812	12.6	
Total	38,255	100.0	38,255	100.0	38,255	100.0	38,255	100.0	38,255	100.0	

In the last twenty-five years the cultivated area increased by only 800,000 hectares, or 32,000 hectares a year, from 13.6% in 1909-13 to 15.8% in 1936, and most of the increase took place in the earlier years. In the last ten years the size of field area has been practically stationary.

It is estimated that in Japan proper there are about 1,700,000 hectares of reclaimable waste land. All this land is definitely marginal and requires large investments for clearing, terracing, irrigating or draining. If the slowness of reclamation activity in recent years is an indication of the difficulties that stand in the way, it will take many years before

¹ Alsberg, Carl L., "Japanese Self-Sufficiency in Wheat," *Wheat Studies of the Food Research Institute*, Vol. XII, Nov. 1935, p. 72.

² Yamaguti, S., "The Distribution of Shifting Cultivation," *Chinaku Hyoron*, Vol. 14, 1938, pp. 1-23, as quoted by Schwind and Matui in *Zeitschrift für Erdkunde*, Vol. 7, 1939, pp. 176-77.

³ Compiled from data given in *International Year Book of Agricultural Statistics*, and *Dainippon Kokoku Tokei Nenkan*.

all the cultivable land is brought into use.⁴ Nearly half this land awaiting reclamation lies in Hokkaido, where the severe winters are a barrier to colonization efforts.

The area under meadows and pastures (8.7%) seems rather large in view of the fact that the livestock industry is so utterly unimportant in the economy of the Japanese peasant.⁵ According to Nasu, the figure for permanent meadows and pastures should be much less.⁶

TABLE 30 JAPAN: CROP AREA AND CULTIVATED AREA⁷
(In thousand hectares)

AREAS	AVERAGES			1935	1936
	1909-13	1925-29	1930-34		
A. Total crop area		6,994	7,051	7,219	7,263
B. Total area under cultivation	5,218	5,992	5,936	6,009	6,036
Ratio of A to B		1 167	1 188	1 201	1.203

Crop Land: The cultivated area of Japan may be small; nevertheless this factor is partly balanced by the intensiveness of Japanese economy: fallow is practically unknown and, where climate and drainage permit, a second or winter crop is grown after the summer rice crop is harvested. The importance of obtaining a second and in some instances a third crop in such a densely settled country as Japan is obvious. Table 30 compares "crop area" and "area under cultivation," and gives their

TABLE 31 JAPAN AREA OF PRINCIPAL CROPS⁸
(In thousand hectares and percentages of total area)

CROPS	1909-13 Average	1925-29 Average	1930-34 Average	1935	1936	1937	1938
	Area	Area %	Area %	Area %	Area %	Area %	Area %
Rice	2,954	31.51 45.1	3,202 45.4	3,178 44.0	3,180 43.8	3,190	3,194
Wheat	477	4.75 6.8	549 7.8	650 9.1	683 9.4	719	719
Barley	1,290	9.45 13.5	816 11.6	775 10.7	774 10.7	327	355
Rye						426	412
Oats	45	1.14 1.6	122 1.7	121 1.7	125 1.7	122	136
Other cereals	479	3.05 4.3	272 3.9	277 3.8	278 3.8	270	
Total cereals	5,245	4,990 71.3	4,961 70.4	5,009 69.4	5,040 69.4	5,053	
Food crops		1,370 19.6	1,405 19.9	1,460 20.2	1,467 20.2		
Industrial crops		209 3.0	219 3.1	259 3.6	262 3.6		
Green manure		475 6.1	466 6.6	491 6.8	494 6.8	484	
Grand Total		6,994 100	7,051 100	7,219 100	7,263 100		

⁴ Ferris Guido "The Problem of Increasing the Area of Land under Cultivation in Japan," *International Review of Agricultural Economics*, Vol. I, 1923, pp. 470-499.

⁵ In 1935 there were 2 head of cattle for every 100 persons in Japan; the ratio in the United States was 52/100, Australia 282/100, New Zealand, 280/100, U.S.S.R., 23/100.

⁶ Nasu, *Shiroshi Land Utilization in Japan* (Tokyo, 1929).

⁷ *Statistical Annual of the Ministry of Agriculture and Forestry (Norinsho Tokeshyo)*.

⁸ *Norinsho Tokeshyo*, 1937 and 1938 figures from *The Japan Year Book*, 1939-40, p. 412, except for green manure, from *Japan Manchoukwo Year Book*, 1940, p. 287. Apparently *Norinsho Tokeshyo* included rye with barley, both *Japan-Manchoukwo Year Book* and *The Japan Year Book* give the following figures: barley 339, rye 436 (or a total of 775) for 1935, and barley 338, rye 436 (or a total of 774) for 1936.

ratio or the "frequency of the use of cultivated land" or, as Nasu calls it, "the annual frequency of arable land utilization." According to Nasu, the "annual frequency" for 1926 was 1.284, while according to our table it was about 1.167 for 1925-29 and only 1.203 for 1936. It is not clear why the difference is so great.⁹

The distribution of the cultivated area among the various types of crops is given in Table 31.

Cereals occupy about 70% of Japan's cultivated area; among these rice has held a fairly steady dominant position, while wheat has increased its share considerably and barley has lost a great deal of its importance.

TABLE 32. JAPAN: PERCENTAGE DISTRIBUTION OF AREA UNDER CERFALS¹⁰

CROPS	1909-13 AVERAGE	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936
Rice	56.3	63.1	64.5	63.4	63.1
Wheat	9.1	9.5	11.1	13.1	13.5
Barley (a)	24.6	18.9	16.5	15.5	15.4
Oats	0.9	2.3	2.5	2.4	2.5
Others	9.1	6.2	5.5	5.6	5.5
Total	100.0	100.0	100.0	100.0	100.0

(a) Apparently including rye, see footnote 8.

The crop land is divided into two groups, the irrigated or "paddy" land and the unirrigated land or "upland." In 1937 paddy land took up 3,191,000 hectares or 52.8% of the cultivated area whereas 2,856,000 hectares or 47.2% were occupied by upland fields. Practically all paddy land is planted with rice in summer—only about 3% is devoted to perennials such as mulberry, fruit trees, sugar cane or vegetables. Wherever climate and drainage are favorable, rice is followed by a winter or "second" crop, which, only in exceptional cases such as in the prefecture of Kochi on the southern shore of Shikoku, is again rice, but usually is naked barley, common barley, or wheat. It must be remembered that rice usually does not compete with barley or wheat, because rice is a summer crop and the others are winter crops. That explains Table 33, which gives the trends in the acreages of the principal grains in Japan proper.

The rice area has increased steadily since 1878; only in the period 1933-37 was there a slight setback. The area under common barley has decreased steadily since 1903-07; naked barley gained up to 1913-17 and then fell off very rapidly. Wheat has gained steadily since 1878, the most remarkable increase taking place in the last five years under consideration. High wheat prices in comparison to barley and sys-

⁹ Nasu, *op. cit.*, p. 133

¹⁰ *Norinobo Tokishio*.

tematic governmental encouragement caused this growth, mostly at the expense of barley. The government favored wheat to such a degree in order to bring about self-sufficiency in this cereal.

TABLE 33. JAPAN PROPER. TRENDS IN ACREAGES OF THE PRINCIPAL GRAINS, 1878-1937¹¹

YEAR	RICE	BARLEY	NAKED BARLEY	WHEAT
1878-82	100	100	100	100
1883-87	102	103	115	109
1888-92	107	107	133	119
1893-97	109	108	145	123
1898-1902	111	108	149	131
1903-07	113	110	151	125
1908-12	116	103	149	131
1913-17	120	98	153	141
1918-22	122	88	142	147
1923-27	124	75	119	131
1928-32	127	65	107	137
1933-37	125	56	95	184

Not only the paddy but also the upland is double cropped, but not quite to the same extent. Upland rice holds the third position as summer crop, following soybeans and sweet potatoes. But a greater proportion of the upland fields is devoted to perennials such as mulberry, citrus and deciduous fruits, persimmons, grapes and tea. Also on the upland fields we find common barley, wheat and naked barley as the most important winter crops.¹² There is little double cropping found along the Sea of Japan, in the northern and northeastern prefectures of Honshu or on Hokkaido because the winters are too severe.

Forests. Japan is essentially a forest country. More than half of the total area is under forest and woods and an additional 8 to 10% is *genya*, i.e. waste land bearing a growth of scrubby trees, shrubs and tall grasses, that also is reserved for forestry purposes. ✓

TABLE 34. JAPAN PROPER AREA OF FOREST LAND¹³
(In thousand cho)

YEAR	TOTAL AREA	FOREST	GENYA
1913	21,084	18,906	2,179
1924	23,215	19,553	3,662
1927	22,903	19,680	3,223
1930	23,203	20,045	3,158
1933	23,843	20,747	3,095
1936	24,187	21,036	3,151

¹¹ Swen, W. Y. and Alsberg, Carl I. "Japan as a Producer and Importer of Wheat," *Wheat Studies*, Vol VI, July 1930, p. 353, for figures up to 1927.

¹² For a discussion and maps of the distribution of these three important winter crops see Swen, W. Y., and Alsberg, Carl I. *ibid.* pp. 354-356 and Alsberg, Carl I. "Japanese Self Sufficiency in Wheat," *Wheat Studies*, Vol. XII, Nov. 1935, pp. 60-67. The above discussion of the utilization of the crop is largely based upon these studies.

¹³ *Norinsbo Tokaiyo*

The forest policy of Japan may be said to be (a) the maintenance under forest of all land which cannot be used profitably for some form of agriculture; (b) the management of all commercial forests, whether publicly or privately owned, so that they will yield continuous crops of timber (policy of sustained yield); (c) the management of all protection forests which ensure the regularity of streamflow, and prevent soil erosion, (d) the afforestation of poor scrub lands, sand dunes and eroded areas; and (e) the control of private forest management to prevent any damage to the state's interests¹⁴

TABLE 35 JAPAN PROPER AREAS OF THE DIFFERENT CLASSES OF FOREST¹⁵

(In thousand cho)

YEAR	TOTAL	CONIFEROUS	DECIDUOUS	MIXED	BAMBOO	OTHERS
1913	18,906					
1924	19,553	4,793	7,899	6,333	127	401
1927	19,680	4,728	8,130	6,187	133	502
1930	20,045	4,671	8,541	6,200	137	496
1933	20,747	5,466	9,162	5,500	150	470
1936	21,036	5,659	9,008	5,759	153	458

The fundamental principle of forest management in Japan is that of sustained yield combined with the maintenance of public welfare. The major product of the forest is, naturally, timber. Minor products are charcoal, produced in large quantities, firewood, bark for roofing, cordage and tanning, turpentine and resin¹⁶

*Land Tenure*¹⁷ With the abolition of feudalism in 1868 the peasants became the owners of the land which they tilled. Landed aristocracy as a class practically disappeared but a new landlord class developed, because peasants now had the right to sell their land and were frequently forced to do so as a result of heavy taxation and debts. The concentration of land in the hands of landlords did not lead to large-scale farming with hired labor, instead, the landlords parcelled the land and rented it out to the former owners who thus became tenants. It was estimated that already in the seventies of the last century almost 20% of the total crop area was being worked by tenants. The development of tenancy still continues (see Table 36). Of the total number of 5,597,000 households engaged in agriculture only 1,731,000 or 30.9% were independent and cultivated their own land in 1936, while no less than 1,518,000 or 27.1% were tenants, and 2,349,000 or 42.0% were part-tenants. The existence of the group of "part-tenants" brings up the question: what portion do these "part-owners-part-tenants" own and what portion do they rent? This question is somewhat elucidated by Table 36.

¹⁴ Turner, I. Phillips. "Japanese Forests and Forestry." *The Empire Forestry Journal* Vol. 16, 1937, p. 13.

¹⁵ *Norinsho Tokaiyo*.

¹⁶ Turner *et al.* p. 23.

¹⁷ For a discussion of land tenure in Japan see: Tokoku shi Y. in *My Report of the Statistical Survey* Vol. 9, pp. 115-118. Farley, Mirum S. "Japan's Unsolved Tenure Problem." *Far Eastern Survey* Vol. VI, July, 1937, pp. 153-159. Ladjinsky W. "Farm Tenancy and Japanese Agriculture." *Far Eastern Survey* Vol. I, 1937, pp. 425-446. Ladjinsky W. "Agrarian Unrest in Japan." *Far Eastern Survey* Vol. I, 1939, pp. 426-433. R. S. "Japanische Agrarfragen," *Zeitschrift für Geopolitik* Vol. XIV, 1937, pp. 18-30, 132-138, 211-221.

TABLE 36. JAPAN PROPER: OWNERSHIP AND TENANCY¹⁸
(In thousand families)

NUMBER OF HOUSEHOLDS ENGAGED IN AGRICULTURE	1926-29 Average		1930-34 Average		1935		1936		1937	
	Num- ber	% of Total	Num- ber	% of Total	Num- ber	% of Total	Num- ber	% of Total	Num- ber	% of Total
Owner-cultivators	1,739	31.2	1,748	31.1	1,732	30.9	1,731	30.9	1,734	31.1
Tenants	1,489	26.7	1,498	26.6	1,518	27.1	1,518	27.1	1,501	26.9
Part-tenants	2,337	42.0	2,377	42.3	2,360	42.0	2,349	42.0	2,340	42.0
Total	5,567	100.0	5,623	100.0	5,611	100.0	5,597	100.0	5,575	100.0

TABLE 37. JAPAN PROPER: DISTRIBUTION OF CROP AREA
CULTIVATED BY OWNERS AND BY TENANTS¹⁹
(In thousand hectares and percentages of total area)

CLASSIFICATION	1926-29 Average		1930-34 Average		1935		1936	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Area cultivated by owners	3,217	53.8	3,131	52.8	3,193	53.1	3,227	53.5
Area cultivated by tenants	2,768	46.2	2,805	47.2	2,816	46.9	2,809	46.5
Total cultivated area	5,985	100.0	5,936	100.0	6,009	100.0	6,036	100.0

Of the total cultivated area only 53% is cultivated by owners whereas 47% is tilled by tenants. There is, however, a considerable difference between the share of tenant and owner cultivation on paddy and upland fields, just as there is a considerable difference in the land value. In 1928, according to Nasu, the price of a cho of good paddy field was 712 yen, while a cho of upland field was worth only 469 yen. More than half of all paddy land and only 40% of the unirrigated land is tilled by tenants.

TABLE 38. JAPAN PROPER: OWNER AND TENANT CULTIVATION²⁰
(In thousand hectares and percentages of total area)

A. ON PADDY FIELDS

CLASSIFICATION	1926-29 Average		1930-34 Average		1935		1936	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Area cultivated by owners	1,508	48.3	1,487	46.6	1,505	47.1	1,514	47.4
Area cultivated by tenants	1,613	51.7	1,703	53.4	1,688	52.9	1,678	52.6
Total paddy land area	3,121	100.0	3,190	100.0	3,193	100.0	3,192	100.0

B. ON UPLAND FIELDS

CLASSIFICATION	1926-29 Average		1930-34 Average		1935		1936	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Area cultivated by owners	1,709	59.7	1,644	59.8	1,689	60.0	1,713	60.2
Area cultivated by tenants	1,156	40.3	1,103	40.2	1,127	40.0	1,131	39.8
Total upland field area	2,865	100.0	2,747	100.0	2,816	100.0	2,844	100.0

Absentee land ownership is very widespread in Japan. In 1934 there were 987,000 individuals recorded as owning land who did not cultivate it themselves. While official data are lacking, it is estimated that about

¹⁸ *Normsbo Toketoyo and Japan Manchoukuo Year Book*, 1940

¹⁹ *Ibid*

²⁰ *Normsbo Toketoyo*

50% of all landowners own only 9% of the total cultivated land, whereas 8% have title to 50% of the land. Land hunger is so great that the few really large estates are never managed as a unit but are worked by tenants. One of the biggest estates has 4,000 acres, divided among 2,486 tenant families.²¹

TABLE 39. JAPAN PROPER: SIZE OF LAND HOLDINGS²²
(In thousands)

SIZE OF HOLDINGS	1926-29 Average		1930-34 Average		1935		1936		1937	
	No	%	No	%	No	%	No	%	No.	%
Under 0.5 hectare	2,497	49.8	2,535	49.7	2,555	49.6	2,557	49.7	2,550	49.6
0.50-0.99 "	1,233	24.5	1,278	25.1	1,304	25.3	1,305	25.3	1,305	25.4
0.99-2.98 hectares	901	17.9	900	17.6	906	17.6	910	17.7	909	17.7
2.98-4.96 "	228	4.5	224	4.4	221	4.3	219	4.2	219	4.3
4.96-9.92 "	114	2.3	113	2.2	111	2.2	111	2.1	110	2.1
9.92-49.59 "	46	0.9	46	0.9	46	0.9	46	0.9	45	0.9
49.59 hectares and over	41	0.08	37	0.07	34	0.07	33	0.06	33	0.06
Total	5,023	100.00	5,099	100.00	5,147	100.00	5,150	100.00	5,142	100.00

About half of all holdings are less than 0.5 hectare and three-fourths are less than one hectare. The number of large holdings is very small and has been decreasing slightly.

TABLE 40. JAPAN PROPER: AVERAGE SIZE OF AGRICULTURAL UNITS²³
(In number of households and percentage of total)

SIZE OF AGRICULTURAL UNIT	1926-29 Average		1930-34 Average		1935		1936		1937	
	No	%	No	%	No	%	No	%	No	%
Under 0.5 hectare	1,945	34.9	1,731	34.3	1,909	34.0	1,896	33.9	1,885	33.8
0.50-0.99 "	1,894	34.0	1,926	34.3	1,919	34.2	1,914	34.2	1,905	34.2
0.99-1.98 hectares	1,204	21.6	1,241	22.1	1,255	22.4	1,262	22.5	1,263	22.7
1.98-2.98 "	321	5.8	320	5.7	323	5	321	5.7	318	5.7
2.98-4.96 "	133	2.4	130	2.3	128	2.3	126	2.3	126	2.3
4.96 hectares and over	71	1.3	75	1.3	78	1.4	78	1.4	78	1.4
Total	5,568	100.0	5,623	100.0	5,611	100.0	5,597	100.0	5,575	100.0

The extreme pressure on the land explains the small size of Japanese farms. Of the 5,575,000 households occupied in agriculture in 1937, 33.8% till less than 0.5 cho apiece and 34.2% between 0.5 and 0.99 cho, so that more than two-thirds of the Japanese peasants have to make their living on farms that appear dwarf-like to Westerners. They cultivate 33% of the arable land. The highest intensification of agricultural methods (garden-culture), double cropping and a practically complete absence of fallow explain at least to a certain extent why such small units can exist. While 3,810,000 families till one-third of the agricultural land, 204,000 families, or not quite 4%, cultivate 23% of the crop area.

²¹ Hall, R. B., "Some Rural Settlement Farms in Japan," *Geographical Review*, Vol. 21, 1931, p. 115

²² *Norinsbo Tokeshyo and The Japan Year Book*, 1939

²³ *Ibid*

The Tenants' Struggle: It is already very hard for small farm owners to wrest a living from their tiny plots; it is much more so for tenants and part-tenants who have to divide their crop with the landlord. The competition for the limited agricultural land is so great that rents have become very high. The rent for paddy land is usually paid in kind, the amount being calculated on the basis of yields in good years, so that the burden of poor harvests is carried by the tenants. In such years the tenant is often forced to ask for reductions. Here lies the reason for many of the disputes between landlords and tenants.

Rents are very high; they are seven times as high as those demanded in England; three and a half times those in Germany. On an average the Japanese tenant gives more than half his crop to the landlord, while from the landlord he receives only the land. The tenants ordinarily supply their own implements, seed and fertilizer; they have their own houses, and pay all assessments and dues except the land tax.

Investigations conducted by the Japanese Department of Agriculture have shown that the standard of living of the tenants borders on destitution. Their income from all possible sources is not sufficient to cover their living expenses. The distress among them is very great. Nasu's statement in 1929 that "the lot of a tenant-farmer is most miserable" has become more true during the years of depression. This becomes apparent in the rapid increase of the officially recorded landlord-tenant disputes. In 1928 there were 1,866 disputes, in 1935, 5,512.²⁴ Both tenants and landlords have organized unions to protect their interests.

In recent years, the landowners have been agitating for nationalization of their land, if the government is willing to pay at the current value; the tenants desire either outright confiscation or purchase at a nominal price.

²⁴ Another source *The Japan Year Book* 1939 40 p. 718 lists tenant disputes as follows: 1933, 4,000; 1934, 5,828; 1935, 6,874; 1936, 6,804; 1937, 6,170; 1938, 3,331.

5. KOREA

Land use in Korea is classified under nineteen heads, namely field, paddy field, sites, pond, miscellaneous land, forest, monastery land, grave land, parks, railway land, canals, road, river, ditch, reservoir, dams, fortress, rail line land and water-supply land. The reason for such a detailed land classification is a fiscal one—it provides the basis for taxation.¹ Table 41 presents a summary of the land use statistics. The source quoted in Table 41 reports the total area of Korea as 220,794 sq. km. It is not clear why the two figures differ by 921,400 hectares.

Korea is a mountainous country like Japan, especially in its northern and eastern parts, and it has few large plains, mostly in the west and south. Because of the generally somewhat lower relief, however, the percentage of the cultivated and cultivable area of Korea is larger than

¹ For a detailed tabulation see Lee, Hoon, K. *Land Utilization and Rural Economy in Korea*, issued under the auspices of the Secretariat of the Institute of Pacific Relations, Chicago, 1936, p. 106. Since the section on Korea was written, Ladejinsky, W., "Chosen's Agriculture and its Problems" *Foreign Agriculture*, Vol. IV, 1940, pp. 95-122, has appeared.

that of Japan. Most of the agricultural land is found on the southern and western side of the peninsula, while the north has the forests. About 20% of the total area of Korea is permanently cultivated. It has been estimated that an additional 1,000,000 to 1,150,000 hectares are cultivable, so that the total cultivable area of Korea should occupy about 26% of the country.

It is characteristic that we look in vain for meadows and pastures in the statistics on land use. The amount of meadow and pasture land, according to Lee, is negligible in relation to the number of animals kept by Korean peasants. The land available is so scarce that it is impossible to devote large areas to grass. Even today dairy farming is very little known and the peasants do not use milk, but use their cattle for farm work.

TABLE 41. KOREA: AREA OF THE VARIOUS LAND USES*

LAND USE	THOUSAND HECTARES	PER CENT OF TOTAL
Permanently cultivated	4,398	20.8
Forests	16,399	77.5
Rivers, lakes, etc.	54.2	0.3
Sites, etc. (a)	216.1	1.0
Public parks	5.8	0.0
Other land	84.9	0.4
Total	21,158.0	100.0

(a) Including urban and village settlements, graves, roads and railroads.

Crop Land: In Korea as in Japan a distinction must be made between irrigated and non-irrigated lands, or paddy land and upland. These two types form the permanently cultivated area. In addition we find the *kaden* or "firefields" in the mountainous forest regions of northern and middle Korea. These are the temporary plots of peasants who carry on shifting cultivation on the hillsides. They burn the forest, frequently after having ringed the big trees if the forest is primeval, and plant their buckwheat, millet or other crop. As soon as the yields decline, they move on and clear another patch. Only rarely will they turn a *kaden* into a permanent field. After 10 or 15 years the fertility is usually sufficiently restored to encourage the *kadenmin*, i.e. "firefield men", to return to the same site.³ This primitive form of agriculture is responsible for a good deal of forest devastation and soil erosion. For this reason the authorities frown upon the activities of the shifters. The *Annual Report of the Administration of Chosen for 1935-36* says of them: "their methods are to set fire to State forests in order to open up fields before sowing seed. They often expose good forests to the danger of fires and devastate fertile lands." The government has adopted the plan of allowing the shifters to remain and continue the cultivation of the fields which they occupy at the moment, but will try to prevent further moves. It remains to be seen what success this policy will have.

* *Chosen Sotokufu Tokei Nempo*, 1936

³ Lautensach, H., "Hauptergebnisse meiner Koreareise," *Petermann's Mitteilungen*, Vol. 80, 1939, p. 175. See also Heydrich, M., *Koreanische Landwirtschaft*, Abh. und Ber. der Museen f. Tierkunde und Völkerkunde zu Dresden, Vol. XIX, 1931, No. 1, Leipzig, 1931.

Table 42 gives the area under permanent cultivation, distinguishing between paddy land and upland. Korea was annexed in 1910, and in the years 1910 to 1918 both paddy land and upland increased considerably. This was not all an actual increase in the cultivated area, however, but largely the result of the Land Survey. It was found that a good deal of the area under cultivation was not registered with the authorities in order to escape taxes. Even today not all land is registered, but in 1936 the unregistered cultivated land was less than 2% of the total.

TABLE 42. KOREA: GROWTH OF AREA UNDER PERMANENT CULTIVATION⁴

(In thousand hectares and percentages of 1910)

YEAR	PADDY		UPLAND		TOTAL	
	Area	Per cent	Area	Per cent	Area	Per cent
1910	840.6	100	1,603.7	100	2,444.3	100
1918	1,531.5	182	2,774.4	173	4,305.9	176
1925	1,550.7	184	2,761.4	172	4,312.1	176
1929	1,595.5	190	2,760.0	172	4,355.5	178
1934	1,657.5	197	2,737.1	171	4,394.6	180
1935	1,667.3	198	2,728.0	170	4,395.3	180
1936	1,675.7	199	2,714.2	169	4,389.9	180
1937	1,689.8	201	2,700.8	168	4,390.6	180

The area occupied by *kaden* or "firefields" is not included in Table 42. This amounted to 153,000 hectares in 1927 and to 434,000 hectares in 1936 but it is quite possible that this apparent increase also is due to better supervision of registration.

Not all the paddy land of Korea is irrigated; a good deal depends upon rainfall and ground water. In 1935, 68% of the paddy fields were actually irrigated.

TABLE 43. KOREA: METHODS OF IRRIGATING PADDY LAND⁵

(In thousand hectares and percentages of total)

YEAR	TOTAL IRRIGATED AREA	IRRIGATED BY IRRIGATION WORKS		WATERED BY RAIN WATER WHOSE DRAINAGE IS CHECKED BY LITTLE DAMS	
1934	1,672	1,138	68.0%	535	32.0%
1935	1,687	1,151	68.2%	536	31.8%
1936	1,691	1,166	69.0%	524	31.0%

There is a difference of opinion on the question of the "frequency of the use of the cultivated area." Hall claims that "there is relatively little double cropping on paddy fields" compared with Japan.⁶ Lee

⁴ *Chosen Sotokufu Tokei Nenpo and Japan-Manchoukan Year Book*, 1940

⁵ *Ibid.* It is not clear why the "total irrigated area" differs from the paddy area given in Table 42.

⁶ Hall, Robert B., "Agricultural Regions of Asia, Part VII—The Japanese Empire," *Economic Geography*, Vol. XI, 1935, pp. 47-48

reports that the frequency was 128 for paddy fields, 139 for upland fields and 134 for the total permanently cultivated area in 1930; i.e., the crop area was 34% larger than the cultivated area.⁷ According to Nasu, the annual frequency of land use in Japan in 1926 was 128 for the total, 130 for paddy and 127 for upland fields. If we are justified in comparing the Japanese figures for 1926 with those of Korea for 1930, we find that the frequency of land use is 6% higher in Korea than in Japan.

Among the crops grown by the Korean peasant, rice takes the first place, followed by barley, millet of various kinds, soybeans, wheat and cotton.

TABLE 44. KOREA: AREA UNDER CROPS, 1936⁸

CROP	THOUSAND CHO	PER CENT OF TOTAL
Rice	1,601.3	26.8
Barley	1,067.0	17.9
Millet	950.0	15.9
Wheat	333.3	5.6
Maize	128.8	2.2
Buckwheat	121.6	2.0
Oats	106.2	1.8
Soybeans	787.4	13.2
Other beans	287.1	4.8
Cotton	229.6	3.8
Potatoes	117.4	2.0
Other crops (mostly vegetables)	238.1	4.0
Total	5,967.8 (5,918.1 hectares)	100.0 ✓

Rice is the most important crop in Korea, but it occupies only about one-fourth of the crop area in contrast to Japan where more than 40% is given over to rice. In the areas where a winter crop can be grown, barley and wheat are sown in the fall and are harvested before the rice has to be transplanted, whereas in northern Korea barley and wheat have to be grown as summer crops. Cotton production has been increased considerably since 1910 because of the encouragement given by Japanese.

Forests: Although Korea has the largest forest area in the Japanese Empire next to Japan Proper, because of reckless cutting and neglect of afforestation in the past, its forest resources are not in as good condition as those of Japan. Only about 55% of the forest area was actually wooded in 1928; but the percentage had increased to 70% in 1936. The rest is practically bare and badly eroded. The northern forests have not suffered as much as those of the south, where the hillsides in the neighborhood of settlements are barren because of the great demand for fuel.

⁷ Lee, *op. cit.*, p. 111.

⁸ *Chosen Sotokufu Tokai Nenpo*

TABLE 45. KOREA: FOREST AREA CLASSIFIED BY USES,
1928 AND 1936*

(In thousand hectares and percentages of total area)

CLASSIFICATION	1928						1936	
	STATE Area	OWNED Per cent	PRIVATE OWNED Area	Per cent	TOTAL Area	Per cent	TOTAL Area	Per cent
Well wooded	4,960	54.5	4,138	57.2	9,097	55.7	11,447	70.6
Thinly wooded	2,162	23.8	1,492	20.6	3,653	22.4	2,095	12.9
Denuded land	1,212	13.3	981	13.6	2,193	13.4	1,180	7.3
"firefields"	279	3.1	84	1.1	363	2.2	511	3.2
Suitable for cultivation	113	1.2	92	1.3	205	1.3	197	1.2
Suitable for pasturing	91	1.0	87	1.2	178	1.1	174	1.1
Suitable for growing grass	122	1.3	161	2.2	283	1.7	242	1.5
Not classified	155	1.8	200	2.8	355	2.2	359	2.2
Total	9,093	100.0	7,235	100.0	16,327	100.0	16,205	100.0

Land Tenure: Up to 1933 Korean agricultural statistics divided all persons connected with agricultural land into six groups: (1) landlords A, who do not till their land but lease it all, (2) landlords B, who till a part of their land and lease the rest, (3) owners, who till all their land, (4) semi-tenants, who till a certain amount of rented land in addition to their own land, (5) tenants, who work only on rented land, (6) *kadenmins* or "shifters." Since 1933, for reasons unknown to the public, Korean statistics have dropped groups (1) and (2) and have added agricultural workers. Up to 1928 the statistics distinguished between Korean and Japanese landowners; since then this distinction has no longer been made, possibly because Japanese landownership was rising too quickly. From 1921 to 1927 the number of Japanese landowners increased by 48%, whereas that of Korean landowners increased by only 12%. Korean holdings increased by 7%, those of Japanese by 43%.

TABLE 46. KOREA: NUMBER OF HOUSEHOLDS CLASSIFIED
ACCORDING TO TENURE STATUS, 1927 AND 1932¹⁰

(In thousands)

STATUS	1927		1932		1932 AS PER CENT OF 1927
	Number	Per cent	Number	Per cent	
Landlords A	20.7	0.7	32.9	1.1	159
Landlords B	84.4	3.0	71.9	2.5	85
Owners	519	18.7	476	16.2	92
Semi-tenants	910	32.7	743	25.4	82
Tenants	1,218	43.8	1,546	52.8	127
Kadenmins	29	1.0	60	2.0	207
Total	2,781.1	100.0	2,929.8	100.0	105

* Lee, Hoon K., *op cit*, p. 184, for figure for 1928, 1936 figures from *Chosen Sotokufu Tokai Nempo*. *Japan-Manchoukuo Year Book*, 1940, p. 520, gives a somewhat different classification for forest area at the end of 1937—area with trees, 11,506,666 cho or 11,411,563 hectares, area under saplings, 2,129,555 cho or 2,111,954 hectares; area without trees, 1,156,485 cho or 1,146,927 hectares, and total, including others, 16,311,876 cho or 16,177,058 hectares.

¹⁰ *Chosen Sotokufu Tokai Nempo*

In 1927 there were 20,700 absentee landlords (landlords A), but in 1932 this number increased to 32,900. Table 46 compares the changes in all six groups.

In five years the number of absentee landlords increased by 59%, owners and semi-tenants decreased in number, whereas tenants and *kadenmins* increased considerably. In 1932 more than half of all families engaged in agriculture were tenants; together with *kadenmins* and semi-tenants they formed 80.2%. The changes since 1932 are illustrated in Table 47.

TABLE 47. KOREA: NUMBER OF AGRICULTURAL HOUSEHOLDS CLASSIFIED ACCORDING TO TENURE STATUS, 1933 AND 1936¹¹
(In thousands)

STATUS	1933		1936		1936 AS PER CENT OF 1933
	Number	Per cent	Number	Per cent	
Owners	545	18.1	546	17.8	100.6
Semi-tenants	725	24.1	738	24.1	101.8
Tenants	1,565	52.0	1,584	51.8	101.2
Kadenmins	82	2.7	75	2.5	91.5
Agricultural workers	94	3.1	117	3.8	124.5
Total	3,012	100.0	3,060	100.0	101.6

It is revealing to know the proportion of the cultivated area tilled by owners and tenants. Since 1927 the proportion tilled by the owners has decreased both on paddy and on upland fields.

TABLE 48. KOREA: OWNER AND TENANT CULTIVATION ON PADDY AND UPLAND FIELDS¹²
(In thousand cho)

CLASSIFICATION	1927-29 AVERAGE		1930-34 AVERAGE		1935		1936		1937	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
PADDY										
Owners	551	34.5	538	32.7	542	32.2	539	31.9		
Tenants	1,047	65.5	1,107	67.3	1,140	67.8	1,150	68.1		
Total	1,598	100.0	1,645	100.0	1,682	100.0	1,689	100.0	1,704	
UPLAND										
Owners	1,458	52.2	1,378	50.0	1,351	49.1	1,337	48.8		
Tenants	1,334	47.8	1,378	50.0	1,400	50.9	1,400	51.2		
Total	2,792	100.0	2,756	100.0	2,751	100.0	2,737	100.0	2,723	
TOTAL AREA										
Owners	2,009	45.8	1,916	43.5	1,803	42.7	1,876	42.4		
Tenants	2,381	54.2	2,485	56.5	2,540	57.3	2,550	57.6		
Grand Total	4,390	100.0	4,401	100.0	4,433	100.0	4,426	100.0	4,427	
Number of families (in thousands)	2,798		2,941		3,066		3,060		3,059	
Area per family (in hectares)	1.57		1.50		1.45		1.45		1.44	

¹¹ *Ibid.*

¹² *Ibid.*, and *Japan-Manchoukwo Year Book*, 1940.

In 1936, 57.6% of the total permanently cultivated area was tilled by tenants, while in the same year tenants in Japan worked only 46.5% of the land. Korea exceeds the other larger countries of the Orient in the extent of tenancy.

There are two main types of rent in Korea: cash rent and share rent, of which the latter is more prevalent. One can distinguish between three types of share rent: (1) fixed rent, which disregards the outcome of the particular crop; (2) *tochi* rent, which is based on each year's yield; and (3) *tachak* rent, which amounts to one-half of the crop. The fixed rent system is risky for the tenant but it encourages him to use the best method of utilization. The *tachak* system is the most common. On an average the Korean tenant pays half of his crop as rent; however, in areas where there is heavy competition rent may go up to 80%, depending upon the type of land.

The living conditions of the tenants in Korea are miserable. Since the World War the number of disputes between landlords and tenants has increased considerably, an observation which is also made in the case of Japan.

6. FORMOSA

Agriculture Two-thirds of Formosa, or Taiwan, is mountainous. The population is concentrated on the plains of western and northern Taiwan and on the gradual slopes leading into the central range of the island. The plains are inhabited by Chinese while the mountains are the habitat of the aboriginal Malays, who practice a shifting cultivation. In 1936 about one-fourth of Formosa was tilled. In 1929 Nasu reported that an area of about 167,200 hectares could be brought under cultivation in addition to the area already cultivated. ✓

TABLE 49 FORMOSA LAND USE¹

(In *square miles* and *hectares*)

LAND USE	AREA	PER CENT OF TOTAL
Cultivated (1936)	853,010	23.8
Forest (1930)	2,141,000	59.7
Wild land or <i>genya</i> (1930)	451,223	12.6
Unspecified	136,167	3.9
Total	3,583,400	100.0

Paddy fields took up 528,000 hectares or 61.6% and upland fields 329,000 hectares or 38.4% of the cultivated area in 1937. Of the paddy fields 61.3% are double cropped. Since 1927 about 75,000 hectares of un-irrigated land or upland have been irrigated and thus changed to paddy land, which represents an intensification in land use.

Formosa's leading crop is rice, which occupies 62% of the crop area, next in area are sweet potatoes (an upland crop) and sugar cane. All the other remaining crops utilize only 14% of the crop area. The

¹ The figures for the cultivated and unspecified areas were taken from *Lukun I-shu*. The figures for forest and wild land are given by Nasu *et al.* p. 732. The total area of Formosa according to the *Japan Manchoukei Year Book*, 1940, p. 15, was 3,596,100 hectares.

frequency of land utilization in Formosa is 127.3 for the total area. No distinction can be made between paddy and upland fields.

TABLE 50. FORMOSA: AREA UNDER CROPS^a
(In thousand hectares)

CROP	AREA	PER CENT OF TOTAL
Rice	687.2	62.1
Sweet potatoes	141.3	12.7
Sugar cane	125.5	11.3
Tea	42.3	3.8
Others	114.2	10.2
Total	1,110.5	100.0

Since it became a part of the Japanese Empire, land utilization in Formosa has undergone considerable changes. The island supplies Japan with tropical crops not grown at home. Recently the Bureau of Productive Industries of Taiwan announced a Ten-Year Plan which is supposed to bring about an expansion in the production of crops for which the island is best suited. Special attention is to be given to rice, sugar cane, cotton, castor beans, sweet potatoes, jute and ramie. Among other objectives a greater diversification of agriculture is planned for. Rice being such a profitable crop, the peasants pay little attention to other crops for which there is great need in the Empire. It is therefore planned to keep the rice area at a constant level, while increasing yields. The sugar cane area is supposed to be increased by

TABLE 51. NUMBER OF AGRICULTURAL HOUSEHOLDS CLASSIFIED
ACCORDING TO THEIR TENURE STATUS IN TAIWAN^a
(In thousands)

PERIOD	OWNERS		SEMI TENANTS		TENANTS		TOTAL	
	Number	%	Number	%	Number	%	Number	%
1927-29 Average	116.9	29.0	124.1	30.8	161.8	40.2	402.8	100.0
1930-34 Average	125.8	30.8	124.0	30.4	158.3	38.8	408.1	100.0
1935	132.1	31.5	128.4	30.6	159.0	37.9	419.5	100.0
1936	132.3	30.9	134.1	31.3	161.8	37.8	428.2	100.0

45%. Cotton has been grown only for two years, occupying 4,270 hectares. The plan proposes an area of about 75,000 hectares. Especially important is the expansion of the castor bean area because its oil is valuable for military purposes. By 1949 Taiwan is expected to have increased its jute area five times so that Japan will no longer be dependent upon imports from British India.⁴

Forests: About 75% of Taiwan is covered by forests and brush. Of the 2,396,000 hectares in 1937, 1,875,000 were forested and 521,000 were covered with shrubs. The tropical lowland forests of the island

^a Takuma Takei

^b Ibid

⁴ Foreign Agriculture, Vol. III, 1939, pp. 163-64.

have been cleared by Chinese peasants so that today the coniferous forests in the mountains are the sources of lumber. The forest survey of Taiwan has not yet been completed but the amount of timber is roughly estimated at 42,074,000 cubic meters of conifers and 111,195,000 cubic meters of deciduous trees.⁶ Formosa's camphor trees gave Japan a world monopoly until synthetic camphor appeared on the market.

Land Tenure: A greater percentage of peasants till their own fields in Taiwan than in Japan and Korea, and in recent years the percentage of full tenants has been decreasing slightly, as shown in Table 51.

⁶ Turner, *op. cit.*, p. 18

7. THE PHILIPPINES

Cultivated and Uncultivated Area: In 1934 more than 55% of the Philippines was still under forest cover, about 18% was grass (*cogon*) and open land, while 22% belonged to farms and estates and was thus largely under cultivation. The Bureau of Forestry has estimated that in order to maintain a balanced soil cover, 11,037,026 hectares should remain as permanent forest and 18,592,574 hectares should ultimately constitute the alienable and disposable area. It has been further estimated that about 16,050,000 hectares, or 54%, are arable. These figures indicate that the Philippine Commonwealth has considerable reserves of potential agricultural land, most of which lies on the islands of Mindanao (the second largest island in the Philippines), Palawan, Samar, Leyte and Mindoro.

TABLE 52. THE PHILIPPINES: CLASSIFICATION OF LAND, 1937¹

TYPE OF LAND	HECTARES	PER CENT OF TOTAL
Commercial forest	13,525,058	45.65
Non-commercial forest	3,723,460	12.57
Cultivated (a)	6,501,384	21.94
Cogon and open land	5,270,805	17.79
Swamp	608,893	2.05
Total	29,629,600	100.00

(a) This also includes uncultivated land belonging to farms and estates

Crop Land: The extent of the cultivated area is not exactly known. The Census of 1918 showed that only 53% of the area belonging to farms was actually under cultivation. A comparison of farm and crop area in 1934 shows that about 63 to 65% of each farm was cultivated.

The leading Philippine crops are rice—both paddy (79%) and hill rice (21%)—coconuts, maize, sugar cane, abaca, tobacco and maguey. Nearly three-fifths of the crop acreage is devoted to two cereals, rice and corn. Since 1910 all major crops have increased their area steadily—with the exception of abaca, which has remained more or less stationary.²

¹ Mimeographed table supplied by the Philippine Department of Agriculture and Commerce, Bureau of Forestry.

² Cruz, Cornelio C., "Population and Land Utilization in the Philippines," *Problems of the Pacific*, 1937, edited by Bruno Lasker and W. L. Holland, Chicago, 1934, p. 389

The climate of the Philippines, of course, permits double cropping, but the few data available indicate that this is not practiced to such an extent as in the crowded countries of Japan, Korea or China. After the harvest of the rice crop many peasants let the land lie fallow for the rest of the year instead of growing a second crop. Where irrigation has been introduced, however, two crops of rice can be grown where before the land produced only one, and in certain regions, for example on the island of Cebu, peasants harvest three crops of maize. Maize, however, is considered a "poor man's crop" and is not as highly valued as rice, which requires a longer growing period. In 1938 about 4,418,000 hectares were under crops; of this acreage 44,180 hectares under rice and 189,940 hectares under corn were planted more than once. Assuming that these two crops account for the major portion of the double-cropped area, the cultivated land was thus 4,183,880 hectares in extent and only about 6% of this was double cropped.³

TABLE 53. THE PHILIPPINES: AREA UNDER PRINCIPAL CROPS⁴
(In thousand hectares and percentages of total area)

Crops	1934		1936		1938	
	Area	Per cent of Total	Area	Per cent of Total	Area	Per cent of Total Area
Rice	2,004	46.3	2,049	45.5	1,912	43.3
Corn	539	12.5	685	15.2	703	15.9
Coconuts	608	14.0	632	14.0	643	14.6
Sugar cane	306	7.1	251	5.6	228	5.2
Abaca	459	10.6	479	10.6	508	11.5
Tobacco	55	1.3	65	1.5	75	1.7
Bananas	108	2.5	92	2.0	92	2.1
Other Crops	246	5.7	252	5.6	257	5.8
Total	4,325	100.0	4,506	100.0	4,418	100.0

In 1918, according to the census, there were 2,415,778 hectares under tillage, while the crop area amounted to 2,612,928 hectares. This would indicate that 197,150 hectares, or 8%, were double cropped. If these estimates approximate the actual conditions, we have here a further indication that the population of the Philippines as a whole is far less hard pressed for land than are the peasants of China and Japan. If there is a land shortage in certain parts of the Philippines it is due to a maldistribution of the population which can be rectified by migration to the less developed and more thinly settled islands of the Commonwealth.

Philippine land utilization also differs from that of other Far Eastern countries in the small number of farms using irrigation. In 1918 only 24.1% of the farms irrigated their land; of these 23.1% made use of natural streams, while only 0.7% employed artificial means to bring the water into the fields.⁵

³ From figures furnished by the Division of Statistics of the Philippine Department of Agriculture and Commerce.

⁴ Philippine Department of Agriculture and Commerce, *Bulletin of Philippine Statistics*, Vol. 6 Nos. 1-2, Manila, pp. 14-25.

⁵ *Census of the Philippine Islands*, 1918, Vol. III, Manila, 1921, pp. 230-231

"The average Filipino depends directly on rainfall for irrigation water, and although there may be a stream close at hand, he does not trouble to turn it on to his land unless conditions happen to be exceptionally favorable. The result is that dry years cause a very heavy, and largely avoidable, loss to the islands. A dependable supply of irrigation water would make two crops a certainty where one is now more or less of a gamble."⁶ It was estimated, apparently in 1929, that some 270,000 hectares were supplied with water from irrigation systems, both government and private, the former serving some 67,000 hectares and the latter being systems built by the owners of large estates or by groups of farmers.⁷ In 1938 the Bureau of Public Works maintained and operated 12 government irrigation systems, serving a total area of 75,920 hectares.⁸

Forest Land: The climate and soils of the Philippine Islands are such that originally, that is before man began to influence conditions, practically the whole land area was covered by a dense tropical forest. The Forest Service distinguishes the following types of forest: virgin or original lowland dipterocarp, seasonal or dry forest, mangrove forest, mountain forest and second growth forest. The remainder of the land area is either covered by *cogonales*⁹ or cultivated. On the basis of utilization, the foresters classify the timberland as commercial forests, which cover 45.6% of the total area, and non-commercial forests, comprising 2.6% of the area. Practically all *cogonales* have been caused by shifting agriculture or *cañgin* culture in the wake of which grasses invade the deforested and burned land after it has been under cultivation for 2 or 3 years. As long as the *cogonales* are burned from time to time, trees cannot come back. The *cañgin* culture is a great enemy of the forests, especially when the *cañgineros* are numerous. It was, therefore, declared illegal in the Philippines under Spanish rule, and under American administration the foresters have tried to check the activity of the *cañginero*. But "for the last ten years alone 28,983 hectares of forest and in the Islands had been illegally converted into *cañgin*. To this vast area must be added *cañgins* in out-of-the-way places that have escaped detection."¹⁰ By law the *cañginero* must obtain permission before he makes a clearing. In 1936 the Forest Service gave 1,028 *cañgin* permits covering 2,912 hectares, while in the same year 2,314 illegal *cañgin* cases, involving 2,510 hectares, were reported.

Land Tenure: The only statistical data on land tenure conditions are to be found in the Census of 1918. Recent investigations have shown that drastic changes must have taken place in the last two decades¹¹ and a great deal of new information is anticipated when the results of the 1939 census are fully published.

In 1918 there were 1,955,276 agricultural units, 1,520,026 or 77.8% of which were operated by their owners, 324,772 or 16.6% by tenants,

⁶ Worcester, Dean C., *The Philippines*, new edition by Hayden, J. R., New York, 1930, p. 634. This statement was made in 1913.

⁷ Miller, Hugo H., *Principles of Economics Applied to the Philippines*, New York, 1932.

⁸ *Annual Report of the Secretary of Public Works and Communications* for the fiscal year ending December 31, 1938.

⁹ *Cogonales* are areas covered with tall grasses such as *Imperata exaltata* or *cogon* and *Saccharum spontaneum* or *alabab*.

¹⁰ Neno, Jose F., "Kaingin Laws and Penalties in the Philippines," *The Philippine Journal of Forestry*, Vol. 2, 1939, p. 87.

¹¹ Allen, James S., "Agrarian Tendencies in the Philippines," *Pacific Affairs*, Vol. XI, 1938, pp. 52-65.

be they cash, share or labor tenants, and 110,478 or 5.6% by squatters on public land. Table 54 gives detailed information about tenure conditions and the size of the farms. Nearly two-fifths of all farms had less than 0.35 hectares each in 1918 and more than three-fifths had less than one hectare per farm, a fact that corrects the misleading impression given by the high percentage of owners. The Philippines is a country of small peasants. In 1918, 38% of all farms accounted for only 4.3% of the area which was under crops, 96.7% of all farms included 64.0% of the crop area, while only 3.3% of the farms accounted for 36% of the land under cultivation.

TABLE 54. THE PHILIPPINES: LAND TENURE, 1918¹²

SIZE OF AGRICULTURAL ENTERPRISE, IN HECTARES	NUMBER OF AGRICULTURAL ENTERPRISES											
	Total		Owners		Cash Tenants		Share Tenants		Labor Tenants		Squatters	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Under 0.35	741,437	37.9	580,937	38.2	21,235	34.2	98,942	38.6	2,048	32.7	38,275	34.6
0.35-1	455,640	23.3	357,103	23.5	12,874	20.8	61,650	24.0	1,563	25.0	22,450	20.3
1-2	328,553	16.8	252,289	16.6	12,064	19.5	44,468	17.3	1,255	20.1	18,477	16.7
2-5	280,789	14.4	216,865	14.3	10,343	16.7	35,495	13.8	814	13.0	17,272	15.6
5-10	84,135	4.3	65,752	4.3	2,739	4.4	8,950	3.5	354	5.7	6,340	5.7
10-15	25,717	1.3	19,605	1.3	1,028	1.7	2,739	1.1	74	1.2	2,271	2.1
15-30	25,488	1.3	18,170	1.2	892	1.4	2,469	0.9	84	1.3	3,973	3.6
30-50	6,288	0.3	4,412	0.3	326	0.5	861	0.3	47	0.7	642	0.6
50-100	3,796	0.2	2,698	0.2	234	0.4	491	0.3	19	0.3	354	0.3
100 and over	3,433	0.2	2,195	0.1	261	0.4	552	0.2	1	.	424	0.4
Total	1,955,276	100.0	1,520,026	100.0	61,996	100.0	256,517	100.0	6,259	100.0	110,478	100.0

There can be no doubt that the larger number of small peasants with holdings far too small to support a family represents a serious problem for the Philippines. These small peasants are always in danger of losing their land by falling into the clutches of usurers.¹³ The concentration of land in the hands of wealthy individuals, of the Church, of private corporations and of the "sugar barons" increases steadily, and with it the army of tenants and agricultural laborers. The distress in these two latter groups has led to uprisings in recent years such as the *Colorums* in 1927, the "rebellion" at Tayug in 1931 and the *Sakdalistas* in 1935.¹⁴

For many years attempts have been made to deal with the problem of the distribution and ownership of the land. There are two possible solutions: first, the purchase and subdivision of large estates and, second, the redistribution of population by colonization on land of the public domain. Several acts have been passed embodying these policies, both prior to and during the Commonwealth period.

Policy in Regard to Large Landed Estates: The acquisition of great tracts of land by the Church, the friars and private citizens under the Spanish régime and of corporations and *hacienderos* under American administration created a serious land tenancy problem which does not come out in the figures of the 1918 census. This development intro-

¹² *Census of the Philippine Islands*, 1918, Vol. III, p. 95.

¹³ Roosevelt, Theodore, "Land Problems in Puerto Rico and the Philippine Islands," *Geographical Review*, Vol. 24, 1934, pp. 199-200.

¹⁴ Allen, *loc. cit.*, p. 52.

duced into the Oriental economy a type of landlordism—European in character and widespread in Latin America—which has reduced the tenant to a position of serfdom.

In 1903 the government purchased the so-called "friar lands,"¹⁵ some 165,000 hectares, of which about 153,000 hectares were to be divided and sold to the peasants. In instances where the land was occupied by tenants these were given the opportunity of becoming the owners in 25 years. A part of the friar lands, however, was sold in large blocks to individuals interested in sugar growing, which caused many unfavorable comments. By December 31, 1940, of the 153,000 hectares to be sold to tenants, sales totaled 114,714 hectares. At the end of 1938 there were about 35,000 hectares remaining to be disposed of, including the cancellations of a few earlier contracts because of non-payment of instalments and the surrender of 17,000 hectares by the Archbishop of Manila as the result of a civil case in 1938.

As against ₱13,860,915 invested in the purchase of the friar lands, the Director of Lands reported that by 1938 some ₱24,092,997 had been collected from the sales of this land. Apart from the friar lands, the Church still holds much good agricultural land and, in spite of the government's efforts, much of the friar lands has again found its way into the hands of the Church and a few large landowners, partly because insufficient help was given to the peasants during the transition period, so that they had to borrow money and again lost the land. Other friar lands were bought at auction by "dummies". In 1938, however, a bill was passed making this practice impossible and on August 9, 1938, President Quezon issued an executive order to the Department of Agriculture and Commerce, requiring it to stop the customary practice of selling friar lands at auction and to use private sale, in an effort to prevent the outbidding of the poor peasants whom the government was trying to help, and to make sufficiently easy terms to enable the peasants to purchase the land.

The Organic Act of 1902 limited to 1,024 hectares the amount of public land that could be leased or sold to a corporation or association. This limitation is still in the Public Land Act as it stands today.

The Constitution of the Commonwealth provides that the National Assembly may "authorize, upon payment of just compensation, the expropriation of lands to be subdivided into small lots and conveyed at cost to individuals."¹⁶

In a special session of the National Assembly in 1938 a bill was introduced which had particular reference to the agricultural sections of landed estates. It provided for an appropriation of ₱1,500,000 from the Coconut Oil Excise Tax Fund for the lease by the Philippine Government of large estates, to be sublet in small lots to bona fide occupants (Commonwealth Act No. 378).

All of these attempts have apparently contributed very little toward bringing about an agrarian reform in the Philippines.

Pioneering on Public Land: During the pre-Commonwealth period

¹⁵ Act No. 1120, Philippine Commission, April 26, 1904.

¹⁶ Act XII, Section 4.

several bills were enacted to foster the establishment of agricultural colonies, the main objectives of which were: (1) the equalization of population spread; (2) the distribution of small holdings through a homestead policy; and (3) the increased production of cereals, especially rice. The first of these bills was passed in 1913 and provided for the establishment of "insular agricultural colonies."¹⁷ Subsequently acts for recruiting, transporting and settling homeseekers, and establishing "provincial agricultural colonies" were put into effect.¹⁸

The island of Mindanao, which is rich in agricultural, mineral and forest resources most of which are still not utilized, and comprises 31% of the landed area of the Philippines, supported only about 7% of the population in 1903 and about 9% in 1918. This explains why this island has attracted the chief attention of the government in its attempt to redistribute some of the population of the congested parts of Luzon and the Visayas. Because of lack of funds and other reasons, however, the number of people settled in Mindanao up to 1936 was "minutely small in proportion to the needs of the situation." In 1935, some 7,000 individuals were living in eight agricultural colonies founded in Mindanao under the Insular Agricultural Colonies Act; about 31,300 homesteaders (6,080 families) had been transported to Mindanao at a government expenditure of about P600,000; and some 775 provincial colonists had been settled at public expense under the provincial agricultural colonies act.¹⁹ As a consequence, in recent years there has again been a demand for an adequate homestead and colonization program to deal successfully with "the evils of usury, land monopoly and tenancy, the rising tide of agrarian troubles and the discontent arising out of un-employment and economic depression."²⁰

In 1934 a new and very promising bill was passed (Act No. 4197) and the Department of Labor drew up a detailed plan for the settlement of public land, but after the passage of Commonwealth Act No. 18 all activities carried on under the provisions of Act 4197 of 1934 were suspended. The Public Land Act (Commonwealth Act No. 141) was enacted in 1936. The chapter concerning homesteads merely states the requirements for applicants as to citizenship, age, landholdings, the amount of land which might be acquired and the requirements as to occupancy and cultivation. In 1938 P200,000 were released as an emergency allocation in order to organize the Mindanao Resettlement Project. In the same year the National Land Settlement Project Administration was established. In June 1939 the name of the corporation was changed to National Land Settlement Administration. This corporation is to receive P20,000,000, to come out of the Coconut Oil Excise Tax Refund.

On February 13, 1939, President Quezon issued a special proclamation setting aside more than 170,000 hectares of public land for resettlement purposes in the provinces of Cotabato, Davao and Agusan on the island

¹⁷ Act No. 2254

¹⁸ Acts No. 2727 and 2806

¹⁹ See Hayden, J. R., *Memorandum on American Experiences with Problems of Population in the Philippines and Puerto Rico*, United States Memorandum No. 4, International Studies Conference, 1937

²⁰ Silayan, H. S., *Organized Land Settlement Under Government Direction*, National Research Council of the Philippines, Bulletin No. 17, p. 108

of Mindanao. On February 23, 1939, the head of the N.L.S.A., Major-General Paulino Santos, sailed to Mindanao with the first group of settlers and a staff of government technicians, and established the first settlement in Koronadal Valley, Cotabato. This vanguard is supposed to be followed by a stream of homeseeking settlers. The National Economic Council proposed the following plan:

(1) To organize and establish settlement projects, chiefly in Mindanao, to accomodate at least 500,000 people within ten years.

(2) To organize these settlements on a producer-consumer basis, each family ultimately to own agricultural land devoted partly to subsistence farming and partly to profitable money crops.

(3) To transfer families from congested areas in Luzon and elsewhere and thus permit an increase in the landholdings of tenants in those areas.

(4) To promote landownership and agricultural development.

The government's attention to the settlement and development of Mindanao is due not only to the fact that this island has the largest reserves of agricultural land in the Philippines but also to political considerations. The government is attempting to strengthen its position on the island, so far "one of its weakest political areas, both vis-a-vis the non-Christians and the Japanese. Development of the island's resources on a sound basis by Filipinos is intended to help safeguard against further inroads by foreigners."²¹ Nevertheless, at the beginning of 1939 the government of the Philippine Commonwealth offered to accept 10,000 European refugees. It has been suggested that these be settled on the plateau of the province of Bukidnon on Mindanao.

One of the main land tenure problems in the Philippines is that of land titles. As a consequence of the slow operation of the Bureau of Lands, handicapped by a limited budget allotment, a very large percentage of the peasants have no title to the land they till.

²¹ *Far Eastern Survey* Vol. VII, 1938, p. 274

8. FRENCH INDO-CHINA

French Indo-China has an area of 740,000 square kilometers. At present only 100,000 square kilometers, or not quite 15%, are utilized in one way or another by a population amounting to 23 millions. Only 60,000 square kilometers, or 8%, are cultivated. The topography of the country determines very largely the distribution of the population and the degree and intensity of land utilization. Flat lowlands, rarely rising to more than a few meters above sea level, occupy less than half of the country. These lowlands are of two types: alluvial plains of recent origin, and old alluvial plains. The former, found especially in the eastern part of the country, i.e. in Tonkin, Annam, Cochin China and southern Cambodia, have rich soils, have attracted by far the greater part of the population and are intensively cultivated. On 15,000 square kilometers of Red River delta land live 7,500,000 people; on 15,000 square kilometers of plains along the coast of Annam live 4,550,000 people; on 16,000 square kilometers of plains in central Cochin China live 3,200,000; on 20,000 square kilometers of western

Cochin China live 1,000,000; and 32,000 square kilometers of plains in southern Cambodia support 2,400,000 people. The soils of the old alluvial plains are impoverished, frequently lateritic, and consequently thinly settled. More than half of Indo-China is mountainous and on the whole scarcely populated.¹

Crop Land: The agricultural statistics of French Indo-China are still very incomplete and represent only estimates. In 1937 the statistics reported a total cultivated area of 5,780,000 hectares, but the list of crops taken into consideration does not include such important ones as beans, cassava, sweet potatoes or mulberry trees. Gourou, after making allowance for these and other neglected crops, estimates that the total cultivated area amounts to 6,000,000 hectares.² The actual crop area is of course large because of double cropping, which is practiced especially in Tonkin and Annam. In Tonkin, for example, there are 1,200,000 hectares under cultivation, whereas the crop area amounts to 1,850,000 hectares because 650,000 hectares bring two crops. In other words, 54% of the cultivated area of Tonkin is double cropped. On the other hand, the peasants of Cochin China, Cambodia and Laos make no special effort to obtain a second crop.³

The above estimate of 6,000,000 hectares of cultivated land does not include the temporary fields of the shifting cultivators. *Rây*, or shifting cultivation, is the dominant form of land use in the mountain regions of Indo-China.⁴

Indo-China's most important crop is rice, and five of the six million hectares of cultivated land are covered with rice fields. The whole economic life of the country depends upon rice to such an extent that one can speak of Indo-China as having a rice monoculture. "The classical image of Indo-China as a pole balanced by two baskets of rice"⁵ characterizes the country very well. The two baskets represent Tonkin and Cochin China or, more specifically, the deltas of the Red River and the Mekong. Of the two, Tonkin has such a large population that its rice crop hardly supplies the local needs in spite of most intensive land use, whereas Cochin China supplies practically all the rice that is exported. Since 1870 the rice area of Cochin China has expanded about fourfold and there is still room for further expansion. The cultivation methods employed in the delta lands of the Mekong River are not as intensive as those used in the delta region of the Red River.⁶

Next to rice in importance is maize, which is grown on uplands as well as on rice fields during the dry season. Besides rice and maize the native peasants grow a large variety of foodstuffs such as millet, cassava, sweet potatoes, beans, peanuts, taro, native and European vegetables and various fruits. Rubber, coffee and tea are the products

¹ For a detailed study of topography, climate and soils and their relation to population distribution and land use, see Gourou, Pierre, *L'Utilization du Sol en Indochine Française*, Paris, 1939, Chapters I through IV.

² *Ibid.*, pp. 15-17

³ *Ibid.*, p. 252

⁴ *Ibid.*, Chapter XII, pp. 347-357

⁵ Thompson, Virginia, *French Indo-China*, New York, 1937, p. 109

⁶ For detailed studies of rice culture and its distribution see: the excellent studies by Henry, Y. M., and Visme, M., *Documents de Démographie et de Riziculture*, Hanoi, 1928, and Henry, Y. M., *Économie Agricole de l'Indochine*, Hanoi, 1932.

of plantations established by French entrepreneurs.⁷ Such crops as cotton, jute, ramie, hemp, tobacco and sugar cane are grown in such small quantities that they do not cover local needs. Pepper is grown practically exclusively by Chinese in Cambodia and Cochín China.

Forest Land: Forests originally covered practically the whole country. Today over 300,000 square kilometers are still forest covered. A forest survey showed that 16% of these forests were disappearing because of *ráy* cultivation, 17% had already become impoverished through *ráy* cultivation and exploitation, 33% were still preserved but inaccessible, and only 34% were accessible and utilized for the production of lumber and firewood.⁸ A large share of the former forest land is today covered by stands of such grasses as *Imperata cylindrica* and *Saccharum spontaneum*, the grasses that form the *cogonales* of the Philippines.⁹

TABLE 55. FRENCH INDO-CHINA: ESTIMATED AREAS OF PRINCIPAL CROPS, 1937¹⁰

(In hectares)

CROP	AREA
Rice	5,000,000
Maize	500,000
Rubber	127,000
Cotton	15,000
Tobacco	22,000
Sugar cane	40,000
Coffee	10,000
Tea	20,000
Coconuts	30,000
Peanuts	15,000
Beans	75,000
Cassava	30,000
Sweet potatoes	115,000
Mulberry trees	25,000

Animal Husbandry: Animal husbandry is of very little importance in the economic life of Indo-China. Cattle supply the farmer with power only, and not with milk or meat. Poultry and pigs are the only animals that contribute to the diet of the natives. One of the main obstacles to a livestock industry is the lack of suitable pasture in the densely settled lowlands where every piece of land that promises a crop is under cultivation. In addition, the animals are subject to frequent attacks of epizootic disease, and in the mountain regions tigers prey on them.¹¹

Land Tenure: About 21 out of the 23 million inhabitants of Indo-China are hard-working peasants who are very poor in spite of their hard work and their best efforts. Conditions of land tenure in Cochín China differ from those in the rest of the members of the Indo-Chinese union.

⁷ For a discussion of the plantation industry of Indo-China see Robequain, Charles, *L'Évolution Économique de l'Indochine Française*, Paris, 1939, pp. 200-241.

⁸ Thompson, *op. cit.*, p. 112. See also, Gourou, *op. cit.*, Chapter XIII.

⁹ Gourou, *op. cit.*, pp. 377-381.

¹⁰ *Annuaire Statistique de l'Indochine*, 1936-37, Hanoi, 1938, with the exception of the estimates for beans, cassava, sweet potatoes and mulberry trees, which were supplied by Gourou, *op. cit.*, p. 16.

¹¹ *Ibid.*, pp. 196-207.

Cochin China is a country of large land holdings, absentee landlords, tenants and landless agricultural laborers, whereas Tonkin, Annam and Cambodia are countries of small peasants who till their own land. As much as 98.7% of the agricultural holdings in Tonkin, 90% of those in Annam and 95.4% in Cambodia, but only 64.5% of the holdings in Cochin China, are operated by their owners.

Size of Land Holdings: The degree of subdivision and population pressure in the various parts of the country is very well illustrated in Table 56 which classifies the rice farms of Tonkin, Annam, Cochin China and Cambodia according to size.

TABLE 56. FRENCH INDO-CHINA: RICE FARMS CLASSIFIED
ACCORDING TO SIZE¹²

SIZE	NUMBER OF FARMS	PER CENT OF TOTAL	NUMBER OF FARMS	PER CENT OF TOTAL
	Tonkin (a)		Annam (b)	
Under 1 <i>mâu</i>	594,000	61.6	450,000	68.7
1-5 "	288,000	29.9	165,000	25.2
5-10 "	60,000	6.2	31,000	4.7
10-50 "	21,000	2.2	8,500	1.3
50-100 "	800	0.1	300	0.1
Over 100 "	200		50	
Total	964,000	100.0	654,850	100.0
	Cochin China		Cambodia (c)	
Under 1 hectare	86,000	33.7	25,000	20.9
1-5 hectares	97,000	38.0	72,000	60.2
5-10 "	38,000	14.9	18,000	15.0
10-50 "	28,000	11.0	4,400	3.7
50-100 "	3,600	1.4	100	0.1
100-500 "	2,400	0.9	40	
Over 500 "	200	0.1	10	
Total	255,200	100.0	119,550	100.0

(a) 1 *mâu* in Tonkin = 0.36 hectare

(b) 1 *mâu* in Annam = 0.50 hectare

(c) Includes only the three rice provinces of Battambang, Prei veng, and Soai-rieng

In the deltas of Tonkin and Annam, the Annamite custom of dividing property equally among all the children has led to dwarf-sized holdings which, furthermore, are split into many tiny parcels. In Tonkin 62% of the farming families have less than 0.36 hectares of rice fields each from which they attempt to meet their needs, and 30% have less than 0.18 hectares. Very similar is the situation in Annam where as many as 69% of the peasants have less than half a hectare of rice land and 25% have from 0.5 to 2.5 hectares. All of these small farms are worked by members of the family. There is no need for outside help; as a matter of fact these small peasants are forced to work for their more fortunate neighbors. They cannot afford to keep draft animals, but hire them or even do completely without them.

¹² *Annuaire Statistique de l'Indochine, 1931-32*, Hanoi, 1933, p. 195. Totals and percentages corrected by ed

In Cochin China, 71.7% of the rice-growing holdings include less than 5 hectares (and are considered small, whereas in Tonkin and Annam a peasant considers himself very fortunate when he possesses that much land); 14.7% of the holdings have from 5 to 10 hectares, 11.1% from 10 to 50, and 2.5% have more than 50 hectares. Small owners, i.e. those who have less than 5 hectares, occupy 12.5% of the rice land; medium-size owners (from 5 to 50 hectares) possess 42.5%; and large landowners (with over 50 hectares) control 45% of the rice land, whereas they account for only 2.5% of the number of holdings. In general, all holdings larger than 10 hectares are divided into parcels of from 5 to 10 hectares and are worked by tenants, known as *ta diên*. The *ta diên* has to clear and level the ground, he has his own implements, builds his own shelter, digs drain and irrigation ditches, and cultivates the land. The landlord receives from 40 to 50% of the harvest. In most instances the tenants have to borrow from the landlord and are forced to pay exorbitant interest so that much more than half of the harvest flows to the landlord, while the small tenant remains in poverty and need.

In Cambodia most of the peasants cultivate less than one hectare if they own river bottom land, or from 1 to 5 hectares if they are living at a distance from the river. Tenancy is much less frequent than in Cochin China.

Table 57 classifies the rice land according to the size of the holdings to which it belongs.

TABLE 57. FRENCH INDO-CHINA: SIZE OF RICE FARMS,
IN PERCENTAGES¹³

REGION	TOTAL AREA UNDER RICE (In thousand hectares)	SMALL HOLDINGS (Less than 5 hectares)	MEDIUM- SIZE HOLDINGS (5-50 hectares)	LARGE HOLDINGS (More than 50 hectares)	COMMUNITY HOLDINGS	TOTAL
Tonkin	1,200	40%	20%	20%	20%	100%
Annam	800	50%	15%	10%	25%	100%
Cochin China	2,300	15%	37%	45%	3%	100%

Community Lands: Besides small, medium and large holdings, Table 57 also mentions community lands, especially in Tonkin and Annam. In Annamite countries the village community owns part of the land constituting its territory. "The land used for pagodas (*huong hoa*) is unassignable and of small area; other parts have been acquired by the village either by gift or by purchase for some given purpose: these form part of the private land of the community. The largest area consists of land originally granted by the State to the village with the right of usufruct. This communal land is distributed in equal shares and according to their qualifications to each member of the collective association which constitutes the village."¹⁴

¹³ *Ibid.*

¹⁴ Pasquier, Pierre, *L'Annam d'Autrefois*, quoted in *Labour Conditions in Indo-China*, International Labour Office, Studies and Reports, Series B, No. 26, Geneva, 1938, p. 188.

Improvement of Land Tenure Conditions: In Annamite countries land ownership is established by an entry in the *dia bo* or village land register. The entries have not been handled with sufficient care, however, so that the register has lost a great deal of its value. There is, therefore, a great need for measures to improve conditions of land tenure by removing the uncertainty of ownership through a new system of registration and cadastral survey. In addition, the government should adopt measures that will help the landless to acquire some land of their own. The productive area can be enlarged through the construction of additional drainage and irrigation canals and dikes. The French administration has in the past achieved remarkable successes through such construction works. One of the needs in the campaign for aiding native peasants is the establishment of agricultural credit organizations in order to combat usury—one of the greatest evils endangering the land holdings of the small peasants. Here again the French administration has made a good start.¹⁵

In recent years the administrations of the various parts of Indo-China have made a number of experiments in the creation of new settlements on heretofore unused land, in the belief that redistribution of population through inner colonization is the only remedy of importance which could be applied without delay. So far, however, no great results have been achieved, largely because of lack of organization. It is thought that a special body with a competent staff experienced in settlement work might contribute a good deal toward relieving the congestion on the plains of Tonkin and Annam by expanding the area under cultivation.

Agricultural Concessions: The French colonial administration, in contrast to the British in Malaya and the Dutch in the Netherlands Indies, has never allowed alienation of land to any but French citizens or companies the majority of whose stockholders were French subjects. Six-tenths of the concessions are found in Cochin China.

TABLE 58. FRENCH INDO-CHINA: APPROXIMATE AREAS HELD IN CONCESSION BY FRENCH CITIZENS OR COMPANIES, JANUARY 1, 1937¹⁶
(In hectares)

REGION	CONCESSIONS			CULTIVATED AREA
	Provisional	Established	Total	
Annam	80,000	80,000	160,000	25,000
Cambodia	80,000	40,000	120,000	30,000
Cochin China	190,000	420,000	610,000	300,000
Laos	700	600	1,300	1,000
Tonkin	11,000	97,000	108,000	44,000
Total	361,700	637,600	999,300	400,000

¹⁵ *Labour Conditions in Indo-China*, Geneva, 1938, pp. 195-215.

¹⁶ *Annuaire Statistique de l'Indochine, 1936-37*, Hanoi, 1938, p. 92. Totals by ed

9. THAILAND

Like Indo-China, Thailand is a country whose economy is entirely dominated by the cultivation of rice.

Completely forest covered before the coming of man, the country today still has an estimated 70% of its area under forest vegetation of one form or another. Probably the greater part of the forest area, however, is no longer made up of primeval forest but is second growth. Over extensive areas grasses have invaded the former forest land and only a few types of trees have been able to hold their position or invade the grass land.

The cultivated or utilized area of Thailand has been estimated by Zimmerman at 5,000,000 hectares or about 10% of the total land area.¹ We can distinguish three main types of agricultural land use in Thailand: the cultivation of permanent fields, shifting cultivation in hill and mountain regions, and plantation cultivation.

Economically the most important form of land use is the cultivation of permanent irrigated fields, all found on the alluvial plains of the rivers. The Thai people, the bulk of the population, live on these plains in permanent settlements and have permanent fields which they cultivate with pointed plows, using water buffaloes as draught animals. The staple is wet rice, either glutinous, as in north Thailand, or non-glutinous, as in the central and southern parts of the country. Rice occupies more than nine-tenths of the crop area. The remaining tenth of the cultivated land is under a variety of crops such as pepper, sesame, beans, peanuts, maize, tobacco, sugar cane, various fruits, cotton and coconuts.

TABLE 59. THAILAND: PROPORTION OF UTILIZED LAND SURFACE, 1930²

REGION	RURAL FAMILIES	APPROXIMATE AREA UTILIZED FOR RURAL FAMILY	TOTAL AREA CULTIVATED OR UTILIZED	TOTAL LAND AREA	PERCENTAGE OF LAND AREA UTILIZED
	(Excluding Bangkok) Number	Hectares	Hectares	Hectares	
North	286,000	2½	644,000	9,168,000	7.0
Northeast	615,000	1½	1,100,000	16,024,000	6.9
Central	650,000	4½	2,763,000	17,548,300	15.8
South	277,000	1½	493,000	7,258,800	6.8
Total	1,828,000		5,000,000	50,000,000	10.0

The population of Thailand presents a varied picture. While the great majority of the people is found on the alluvial and intermontane plains where they carry on permanent agriculture with the help of irrigation, the forested hill and mountain regions are the habitat of a number of tribes which practice shifting cultivation, using as their tool the hoe or the digging stick. There are some tribes who have permanent fields on which they grow wet rice, but these fields must be supplemented by cleared forest land for upland rice and other crops which do not need irrigation. Other tribes practice shifting cultivation

¹ Zimmerman, Carl C., "Some Phases of Land Utilization in Siam," *Geographical Review*, Vol. XXVII, 1937, p. 386.

² *Ibid*

exclusively, moving slowly through the forest, clearing a new piece of land each year, and leaving the old one to be invaded by *Eupatorium odoratum*, a rampant weed introduced from America that quickly chokes forest clearings to the exclusion of everything else.³ The only tree that is able to invade a stand of *Eupatorium odoratum* is bamboo (*Thyrsostachy siamensis* and *Oseytbenanthera*). Wherever large stands of bamboo appear in the midst of a rain or monsoon forest region they indicate old field clearings. The characteristic crop of the shifting cultivators is upland rice, beside which such crops as maize or poppy have only local importance.

Both shifting and permanent cultivation have been practiced in Thailand since time immemorial, and only recently have these been joined by the plantation system, whose major crop is rubber. Practically all plantations are in the hands of foreigners, both Chinese and Westerners. Plantations have not yet gained great importance in Thailand, however. Zimmerman made the estimate shown in Table 59 of the extent of utilized land in the various parts of the country.

Crop Area: The crop area of Thailand is not known exactly. We have estimates for only the principal crops. Rice occupies about 94% of the crop area while most of the remaining area is under rubber and coconuts.

TABLE 60. THAILAND: DISTRIBUTION OF THE CROP AREA IN
1937-38⁴
(In hectares)

CROP	AREA	PER CENT OF TOTAL AREA
Rice	3,369,979	94.06
Tobacco	10,620	.30
Maize	8,733	.24
Cotton	8,027	.22
Soybeans	6,008	.17
Peas	11,038	.31
Sesame	968	.03
Pepper	779	.02
Coconuts	50,101	1.40
Rubber	116,504	3.25
Total	3,582,757	100.00

Gardens, fruit gardens and minor crops are not included in these estimates, so Zimmerman's estimate of a cultivated area of 5,000,000 hectares probably comes close to reality. There seems to be very little double cropping. It is frequently stated in literature on the subject that the rice fields are uncultivated the greater part of the year.

Irrigation: The question of irrigation is very important in a country that depends to such a degree on rice, a crop which demands 1,800 mm. or about 6 feet of precipitation from June to November. Only limited

³ Credner, Wilhelm, *Siam*, Stuttgart, 1935, p. 116.

⁴ *Statistical Year Book of the Kingdom of Siam*, 1936-1937, p. 587, with the exception of the figure for rubber which refers to 1934-35 and is quoted from the 1934-35 *Year Book*, p. 466. Rubber statistics for a later date are omitted from the 1936-37 *Year Book* because "national returns have not yet been organized satisfactorily."

sections of the plains of Thailand receive that amount of rain and they therefore require a supplementary water supply which is provided by the flooding of the rivers. The Thai peasants have always tried to direct the floods in order to give their fields the proper amount of water. To this end they have constructed a system of canals and ditches. The past has shown, however, that the digging of canals does not solve the problem because the canals do not protect the rice plains against excessive flood water at times when the rivers rise to exceedingly high levels, and they do not supply enough water in years when the rivers do not rise to flood level. In order to be protected against hazards in the water supply and large variations in the rice yield, therefore, the country stands in need of large water works: (1) dams are needed in order to store water from the great rivers so that the rice fields can be properly irrigated in years of scant precipitation and absence of summer floods; (2) dikes are needed to protect the plains against destructive floods; (3) a system of canals is required to carry the stored water into the areas of cultivation and, in the event of an oversupply of water, to drain the water into the rivers; and (4) the various river systems must be connected with one another in order to allow for the exchange of water.⁵

Land Tenure: The question of land tenure conditions in Thailand is difficult to discuss because of the lack of statistical data. The mass of the peasants own the land which they till. This is especially true of those regions which still have subsistence agriculture, while with the increase of land values in commercialized regions there has developed a class of landless and poor peasants who are forced to work either as tenants or as agricultural workers. Especially around Bangkok and in the Klong Rangsit area we find large holdings owned by absentee landlords and rented to tenants who pay cash rent and the land tax. Short contracts are usual, so that the tenant has no interest in improving the land through intensive labor, as no provisions are made to repay him.⁶ The highest percentage of tenancy was found at Dhanyaburi, east of Bangkok, where 84% of the peasants were tenants. Usually the percentage of people who have rented land varies between 5 and 30%.

The peasants of the commercialized rice-producing regions of Thailand have higher debts than those in out-of-the-way districts, and the land is slowly concentrating in the hands of Siamese and Chinese money-lenders and usurers.

⁵ Credner, *op cit.*, pp 212-222 Ministry of Commerce and Communications, *Siam, Nature and Industry*, Bangkok, 1930, pp 185-203

⁶ Zimmerman, Carl C., *Siam, Rural Economic Survey, 1930-31*, Bangkok, 1931, pp. 305-310.

10. BRITISH MALAYA

Until very recently, statistics on land utilization in British Malaya were hopelessly incomplete. The total area of British Malaya, excluding Labuan, Christmas Island, the Cocos Islands and Brunei, is 51,070 square miles or 32,684,800 acres. Of these, about 6,000,000 acres or 18.4% have been alienated for agricultural purposes, and about 5,074,000

acres or 15.5% were actually under crops in 1938. Considering the fact that only the western part of the peninsula has so far been developed, there can be no doubt that the cultivation of all crops could be considerably augmented. There is, however, very little room for expansion in the Straits Settlements or in the Federated Malay States of Perak, Selangor and Negri Sembilan, whereas large areas of Pahang and the various Unfederated Malay States could be put to agricultural use should there be a demand for increased crop acreage.

Crop Area: The major crops of Malaya are rubber, coconuts, rice, oil palms and pineapples, while areca nuts, tapioca, derris, coffee, tea, gambier, tobacco, bananas and other fruits are less important in the economy of the country and are referred to as secondary crops. Important export crops are rubber, coconuts, oil palm, pineapples, spices, areca nuts and tapioca, while rice is grown exclusively for home consumption. The rice production of Malaya is, however, insufficient for the country's needs; in 1937 the rice harvest supplied only about 36% of the requirements. Table 61 supplies data on areas under various crops for the year 1938.

TABLE 61. BRITISH MALAYA: AREA UNDER PRINCIPAL AGRICULTURAL CROPS, 1938¹

CROP	MALAYA		PERCENTAGES OF SPECIFIC MALAYAN CROP ACREAGE IN		
	Acres	Per cent of total crop area	Straits Settlements	Federated Malay States	Unfederated Malay States
Areca nuts	61,922	1.2	3.6	8.2	88.2
Bananas	32,093	0.6	4.3	52.5	43.2
Coconuts	613,417	12.1	12.1	41.0	46.9
Coffee	22,923	0.5	3.0	53.2	43.8
Derris	9,589	0.2	12.4	42.8	44.8
Gambier	3,025	0.1	0.5	43.6	55.8
Oil palms	72,143	1.4	.	50.8	49.2
Pineapples	67,394(a)	1.3	5.4	16.9	77.7
Rice	726,670	14.3	9.3	24.3	66.3
Rubber	3,281,900	64.7	10.2	49.2	40.6
Tapioca	24,301	0.5	8.5	53.5	38.0
Tea	6,158	0.1	0.3	85.1	14.6
Tobacco	4,186	0.1	15.8	42.5	41.7
Misc. fruits	71,303	1.4	13.0	53.6	33.3
Vegetables	1,239	...	...	15.7	84.3
Others	75,902	1.5	20.4	41.6	38.0
Total	5,074,165	100.0	10.1	43.7	46.1

(a) Of these, 49,075 acres are sole crop

Rice, coconuts, areca nuts, various fruits and other miscellaneous crops were grown by the native Malays long before the coming of Chinese and Europeans, both of whom contributed to the development of agriculture in Malaya by introducing new crops. In the early 19th century there was a considerable spice and gambier industry in the

¹ Dept. of Agriculture, S. S. and F.M.S., *Malayan Agricultural Statistics*, 1938.

hands of Chinese farmers. Pepper was then the most important crop that found its way from Malaya to the world market. For a short period sugar flourished in Province Wellesley and in Penang. The sugar was followed by coffee, which was grown by European planters coming from Ceylon, especially in Perak and Selangor. Disease and price fluctuations, however, caused the ruin of the coffee industry. In 1877 the first rubber trees were introduced into British Malaya but rubber planting on a large scale did not commence until the first years of the 20th century. Since then rubber has been king among the agricultural crops of British Malaya; about 65% of all the land under crops is taken up by rubber plantations. The depression has shown the danger of the outstanding characteristic of Malaya's agriculture—the extensive cultivation of export crops and the total inadequacy of food crop production. Malaya requires large imports of rice, coffee, tea, groundnuts, sugar, tobacco, livestock, meat, dairy products, poultry and eggs—practically all items that could be produced at home. The government is trying to encourage diversification and especially an increased cultivation of rice at the expense of rubber, but so far with little success. The rice area expanded from an average of 662,000 acres in 1925-29 to 740,000 in 1937, but dropped again in 1938. In recent years there has been a considerable increase in land under oil palm and pineapples, grown for export. Both crops were cultivated in Malaya before rubber began its triumphant march, but not until recent years did they attract the attention of planters.

TABLE 62. BRITISH MALAYA. GROWTH OF THE AREA
UNDER VARIOUS CROPS^a
(In acres)

YEAR	RUBBER	RICE	COCONUTS	OIL PALMS
1925-29 Average	2,585,737	662,185	...	18,842
1930-34 Average	3,126,952	739,922	608,634	59,345
1935	3,178,864	734,730	608,278	64,156
1936	3,219,903	725,050	608,783	65,227
1937	3,304,657	740,040	609,417	68,925
1938	3,296,647	726,670	613,417	72,143

Land Tenure: It was mentioned above that only about 18.4% of the land has been alienated for agricultural purposes. In Perak, Selangor and Negri Sembilan, however, the land question has become acute and Malay reservations have been created in order to prevent further alienation to Europeans, Chinese or Indians.

At the end of 1936 an area of 9,750 square miles was under reserved forest and therefore non-alienable. An additional 406 square miles was alienated for mining purposes. Table 63 gives data on the alienation of land at the end of 1936.

All land that is not alienated belongs to the crown in the Straits Settlements, and to the state in the Federated and Unfederated Malay

^a *Malayan Agricultural Statistics.*

States. The entire property and the control of state land is vested solely in the ruler of the state in which it is situated.³ In the Federated States the power of alienation lies with the Resident of the state. In the Unfederated States alienation is usually in the hands of the Commissioners of Lands and Mines.

TABLE 63. BRITISH MALAYA: AREA OF LAND ALIENATED, END OF 1936⁴

POLITICAL UNITS	TOTAL AREA	AREA ALIENATED		RESERVED FOREST	AREA UNALIENATED
	(Square miles)	Buildings & Agricultural Land (acres)	Mining Land (acres)	(Square miles)	(Square miles)
Federated Malay States	27,540	2,581,046	202,019(a)	7,503.3	15,688.2
Straits Settlements (b)	1,260	610,116	0	127.4	179.3
Unfederated Malay States	22,270	2,760,859	57,747	2,119.4	15,746.5
Total (c)	51,070	5,952,021	259,766	9,750.1	31,614.0

(a) December 1937 figures.

(b) Excluding Labuan, Christmas Island and the Cocos Islands

(c) Excluding Brunei.

There are five classes of land in Malaya (except in the Straits Settlements): (1) town land; (2) village land; (3) country land of less than ten acres; (4) country land greater than ten acres; and (5) foreshore and sea bed.

For present purposes we are concerned only with (3) and (4). A distinction is made between these categories in order to distinguish the indigenous system, which is characterized by small holdings, from the plantation system. The following regulations are framed to meet this distinction.⁵

Titles to country land of less than ten acres are established by entry in the *mukim* register, which is based on the Torrens system, while title to land exceeding ten acres in area is either by grant or by lease. "The Torrens system of land transfer has been extended to all parts of Malaya, with the exception of the Straits Settlements, and it requires all transactions connected with the land to be registered in the local Land Office or Registry of Titles, for them to acquire validity. Except for a few short term leases, all land is now alienated under what is in effect, whatever it may be called, a perpetual lease, subject to a rent, which in the case of alienations since 1911 is liable to a revision at intervals of not less than thirty years and subject to conditions of cultivation or use. As a result, save in the Straits Settlements, almost all is held under a simple and practically uniform system of tenure."⁶

Characteristic of Malaya is the fact that a high percentage of the alienated agricultural land is in the hands of foreigners, be they Westerners

³ For a description of the pre-European conditions of land tenure in Malaya, see the valuable study by Maxwell, W. E., "The Law and Customs of the Malays With Reference to the Tenure of Land," *Journal of the Straits Branch of the Royal Asiatic Society*, No. 13, 1884, pp. 75-220.

⁴ *Malayan Agricultural Statistics*, 1938, Table 1.

⁵ Leake, H. M., "Studies in Tropical Land Tenure," *Tropical Agriculture*, Vol. IX, 1932, p. 322.

⁶ Grist, D. H., *Outline of Malayan Agriculture*, Kuala Lumpur, 1936, p. 27.

or Chinese or Indians. In spite of the distinction made by the Land Offices between country land of less than and exceeding 10 acres, for statistical purposes enterprises above 100 acres are considered estates, while those under 100 acres are small holdings. Holdings under 10 acres are largely held by Malay peasants, while many of the enterprises of between 10 and 100 acres are in the hands of Chinese and Indians. There are very few estates of noteworthy size owned by Malays, but the total area cultivated by Malays on small holdings is considerable. Paddy cultivation is entirely a Malay occupation; coconuts, spices and fruits are intercultivated by Malays on their holdings.

There are no figures available on the division of the total agricultural land between estates above 100 acres and small holdings; they are only available for such crops as rubber, coconuts and oil palms. In 1938, of the 3,296,647 acres under rubber 2,031,969 acres, or 61.6%, belonged to estates of more than 100 acres, while 1,264,678 acres, or 38.4%, belonged to small holders.

The share of the small holder varies in different parts of Malaya, being 36.0% in the Federated States, 38.3% in the Straits Settlements and 41.2% in the Unfederated States in 1938. Of the latter, however, only Johore and Kedah have significant rubber acreages, accounting for 1,192,915 out of 1,347,914 acres, or 88.5%. In 1938, 41.1% of the acreage in Johore and 30.1% of Kedah's rubber acreage were in small holdings.

TABLE 64. BRITISH MALAYA: RUBBER ESTATES, BY SIZE OF HOLDING⁷
(In acres)

ACREAGE	FEDERATED MALAY STATES	STRAITS SETTLEMENTS	UNFEDERATED MALAY STATES	TOTAL	GRAND TOTAL
1931-34 Average					
Over 100 acres	969,865	214,649	713,488	1,898,002	3,161,596
Under 100 "	565,840	130,063	567,691	1,263,594	
1935—Over 100 "	1,040,000	207,526	774,443	2,021,969	3,194,856
Under 100 "	539,760	125,688	507,439	1,172,887	
1936—Over 100 "	1,036,650	205,105	779,947	2,021,702	3,236,644
Under 100 "	539,760	125,688	549,494	1,214,942	
1937—Over 100 "	1,033,426	207,790	785,132	2,026,348	3,304,657
Under 100 "	592,106	127,737	558,466	1,278,309	
1938—Over 100 "	1,032,426	206,858	792,685	2,031,969	3,296,647
Under 100 "	581,183	128,266	555,229	1,264,678	

Of the total area belonging to estates with more than 100 acres in 1938, Western capital controlled about 75% in Malaya, as much as 83% in the Federated States, 64% in the Straits Settlements and 69% in the Unfederated States—principally Kedah and Johore. Chinese controlled about 16% (1938) of the large estates, Indians 4% (1938) and Japanese 3.6% (1931). Assuming that, with few exceptions, areas under 100 acres are in the possession of Asiatics, mostly Chinese, we find that Orientals control about 54% of the total area planted to rubber.

⁷ *Malayan Agricultural Statistics*.

Of considerable interest is Table 65 which reveals the ownership, by race, of rubber estates exceeding 100 acres.

TABLE 65. BRITISH MALAYA: OWNERSHIP BY "NATIONALITY" OF RUBBER ESTATES OF OVER 100 ACRES IN 1931 AND 1938⁹

"NATIONALITY"	FEDERATED MALAY STATES		STRAITS SETTLEMENTS		UNFEDERATED MALAY STATES		TOTAL	
	Area (acres)	Per cent	Area (acres)	Per cent	Area (acres)	Per cent	Area (acres)	Per cent
1931								
European (non-Asiatic)	813,339	86.0	146,809	69.4	569,836	64.0	1,529,984	74.7
Chinese	92,389	9.8	52,864	25.0	173,508	19.5	318,761	15.6
Japanese	7,710	0.8			66,079	7.4	73,789	3.6
Indian	26,927	2.9	9,910	4.7	69,811	7.8	106,648	5.2
Malay	4,883	0.5	1,834	0.9	11,261	1.3	17,978	0.9
Total	945,248	100.0	211,417	100.0	890,495	100.0	2,047,160	100.0
1938								
European	853,841	82.7	132,165	63.9	544,414	68.7	1,530,420	75.3
Chinese	118,076	11.4	61,011	29.5	143,554	18.1	322,641	15.9
Indian	47,104	4.6	12,036	5.8	28,655	3.6	87,795	4.3
Other	13,405	1.3	1,646	0.8	76,062	9.6	91,113	4.5
Total	1,032,426	100.0	206,858	100.0	792,685		2,031,969	100.0

Coconut products form the second most important agricultural export item of Malaya. Wherever a Malay settles one finds at least a few coconut trees, which supply him with food, drink, fuel and other necessities of life. The total area covered by coconuts has been estimated at 613,417 acres; of these not more than about 120,000 to 125,000 acres belong to estates of 100 acres or more, the remainder being owned by Asiatics and mostly contained in areas of only a few acres each. "There are 163 coconut estates of over 100 acres each, of which 36 estates have a planted area exceeding 1,000 acres each."⁹

TABLE 66. BRITISH MALAYA: AREA PLANTED WITH COCONUTS IN 1938, BY SIZE OF HOLDING¹⁰
(In acres)

ACREAGE HOLDINGS	FEDERATED MALAY STATES	STRAITS SETTLEMENTS	UNFEDERATED MALAY STATES	TOTAL
Over 100 acres each	94,146	(20,000 ?)	3,906	..
Under 100 acres each	157,440	(54,000 ?)	283,578	...
Total	251,586	74,347	287,484	613,417

Oil palms are grown exclusively on plantations. The industry started in 1917 and has had a considerable growth since 1926, as shown in Table 67. The area planted in Malaya in 1938 amounted to 72,143 acres, of which 34,946 acres were in Johore, 18,038 in Perak, 14,570

⁹ *Ibid.*

⁹ Grist, D. H., *An Outline of Malayan Agriculture*, Kuala Lumpur, 1936, p. 102.

¹⁰ *Malayan Agricultural Statistics*

in Selangor, 2,494 in Negri Sembilan, 1,544 in Pahang and 541 in Kelantan.¹¹

TABLE 67. BRITISH MALAYA: AREA UNDER OIL PALMS¹²

DATE	ACRES
1925-29 Average	18,842
1930-34 Average	59,345
1935	64,156
1936	65,227
1937	68,925
1938	72,143

TABLE 68. BRITISH MALAYA: ACREAGE PLANTED WITH OIL PALMS IN 1938, BY SIZE OF ESTATE¹³

SIZE OF ESTATE	NUMBER OF ESTATES	ACREAGE PLANTED
Estates of over 2,000 acres	9	50,133
Estates of between 1,000 and 2,000 acres	9	12,375
Estates of between 500 and 1,000 acres	8	5,562
Estates of under 500 acres	17	4,074
Total Area	43	72,143
Reserve Land	...	38,559

In 1938 there were 43 oil palm plantations in Malaya, 9 of which had over 2,000 acres under cultivation and 9 between 1,000 and 2,000 acres. Large estates are considered to be more economical than small estates, the factory requirements of the crop being the deciding factor.

In contrast to such crops as rubber, coconuts and oil palms, rice is grown exclusively by small Malayan peasants who form the rural population of Malaya and produce sufficient for their own needs. There are no statistics published that would reveal the average size of a Malayan peasant farm or the amount of paddy land tilled by a farmer. The states of Kedah, Kelantan and Perak have the largest areas of paddy land, amounting to 247,230, 146,500 and 91,660 acres respectively in 1938, or 66.8% out of a total of 726,670 acres.

A country like Malaya that still has an abundance of undeveloped cultivable land does not require detailed studies on its agricultural economy or on the economic condition of its rural population. It is not the peasants who are the subjects of statistical surveys and studies, but the plantation economy—especially since overproduction and the fall in prices have revealed the precarious position of Malaya, a land whose economic structure rests largely upon rubber and tin.

¹¹ *Ibid.*¹² *Ibid.*¹³ *Ibid.*

11. NETHERLANDS INDIA

Together with the small island of Madura off its northeast coast, Java is without doubt the most important part of the Netherlands Indies, a fact recognized by the official statistics which always report separately for Java and Madura and for the Outer Provinces. While Java and Madura have only 7% of the area, they have 69% of the population.

In a discussion of land use in the Netherlands Indies one must distinguish between native and estate land use. The fundamental difference between native and estate agriculture is that the former is devoted primarily to local consumption—although sales on the world market have gained in importance for the indigenous peasants—whereas estate agriculture, organized on a capitalistic basis, produces exclusively for export. Export statistics distinguish between estate and native products coming from Java and from the Outer Provinces. Crops which require an expensive manufacturing process before they can be sold predominate on the plantations, while others are exclusively native products. In 1938, 99.4% of the sugar, 98.3% of the cocoa and 81.9% of the tea exported were plantation grown, while during the same year 84.6% of the kapok, 94.1% of the copra and 99.6% of the pepper exported came from native farms. Gambier and rubber exports are both divided about equally between the native farms and the plantations.

TABLE 69. NETHERLANDS INDIA: LAND CLASSIFICATION IN
JAVA AND MADURA, 1938¹
(In hectares)

CLASSIFICATION	AREA	PER CENT OF TOTAL AREA
Land used for native agriculture	7,855,900	59.44
Tidewater fisheries	69,300	0.52
Land used for estate agriculture:		
Government estates	20,531	0.16
Private estates, cultivated	45,411	0.34
uncultivated	294,101	2.23
Estates with long leases, cultivated	388,818	2.94
uncultivated	169,375	1.28
Estates on land leased from native states,		
cultivated	45,135	0.34
uncultivated	14,437	0.11
Remaining estate agriculture	31,192	0.24
Government forests:		
Teak forests	815,400	6.17
Other forests under protection	1,905,900	14.42
Other forests not included in reserves	316,300	2.39
Rest (settlements, roads, inland waters, etc.)	1,245,600	9.42
Total	13,217,400	100.00

There is a remarkable difference between Java and the Outer Provinces when it comes to the share of native crops in the total export.

¹ *Indisch Verslag*, 1939.

Although the number of native peasants in Java and Madura is about twice as large as in the Outer Provinces, the peasants of the latter receive on an average twice as much money as do those of Java (in 1937 the ratio was 1:4). If, however, we take the number of peasants working on their own account, both in Java and in the Outer Provinces, and compare this with the value of native export products we find that in 1930 it came to 8.8 florins per head in Java and to 46.3 florins in the Outer Provinces; in 1935 the figures were 4.0 florins and 17.5 florins. This is due to the land pressure in Java which is so heavy that many peasants find it difficult to raise even enough food for their families. In addition, the 54.7% of the natives engaged in native agriculture have to raise food for the rest of the natives, while in the Outer Provinces more than 70% of the natives till the soil. A much higher percentage of native peasants in the Outer Provinces can work for export instead of for subsistence as is common in Java and Madura.

Cultivated and Uncultivated Area: Complete figures on land use, unfortunately, are available only for Java and Madura. For the Outer

TABLE 70. NETHERLANDS INDIA: LAND CLASSIFICATION IN THE OUTER PROVINCES, 1938^a
(In hectares)

CLASSIFICATION	AREA	PER CENT OF TOTAL AREA
Government estates in Sumatra		
Cultivated	7,314	0.004
Uncultivated	3,365	0.002
Private estates in Sumatra		
Cultivated	414	0.0002
Uncultivated	327	0.0002
Estates with long leases in Sumatra		
Cultivated	113,426	0.064
Uncultivated	235,431	0.133
Estates with long leases in the remaining Outer Provinces		
Cultivated	41,379	0.023
Uncultivated	62,538	0.035
Estates with agricultural concessions in Sumatra		
Cultivated	394,365	0.223
Uncultivated	494,831	0.279
Estates with agricultural concessions in the remaining Outer Provinces		
Cultivated	15,760	0.009
Uncultivated	36,375	0.021
Estates on land rented from natives	377	0.0002
Supervised government forests in Sumatra	7,218,500	4.073
Supervised government forests in the remaining Outer Provinces	3,057,100	1.725
Other forests in Sumatra	22,051,300	12.443
Other forests in other Outer Provinces	88,490,500	49.933
Remaining land	54,993,858	31.032
Total Outer Provinces	177,217,160	100.000

^a Ibid.

Provinces we know only the size of the area cultivated by plantations and not the area cultivated by natives, although this must be larger than that of all the plantations combined.

Table 70 on land classification in the Outer Provinces brings out the fact that 89% of all land controlled by plantations lies on the island of Sumatra. The remaining plantation area is distributed as follows: Borneo 4.4%, Menado 2.1%, Celebes 0.9%, Moluccas 2.5%, Timor 0.8%, and Bali and Lombok 0.3%. The plantation land actually under cultivation is distributed in more or less the same way. A considerable part of the land held in one legal form or another by the plantations is not cultivated, but does not necessarily represent a reserve for future expansion. Tobacco plantations in the Deli area of Sumatra, for example, need large holdings in order to rotate their fields in an eight-year cycle. Thus the Deli-Maatschappij has concessions of 93,100 hectares, but uses only about 7,000 hectares each year.

The figures for Java and Madura show that 59% of the area is cultivated by the native population; only 7.7% is used by plantations. The forest area is relatively small, only 23%. Recent investigations have shown that this percentage is very low and has adverse effects upon the water economy of the country. For this reason the Forest Service is spending considerable sums for reforestation, especially on the slopes of volcanoes in East Java. It has been said that about 30% of Java should be forest covered. There is no doubt that Java has very little land left that can be added to the cultivated area without encroaching on the forest.

The Outer Provinces, on the other hand, have large possibilities for the expansion of the cultivated area. There is, however, a very important difference between the agricultural systems in Java and in the Outer Provinces, with the exception of Bali and Lombok, and one which has a bearing on the question of expanding the area under cultivation. Practically all land in Java, Madura, Bali and Lombok is used permanently, i.e., the pressure on the land is so great that the peasants can no longer rotate their fields. The only part of Java where shifting cultivation is still legal is Bantam Residency where peasants can rent *huma* land from the government. (*Huma* or *ladang* culture is shifting culture.) In the Outer Provinces, however, at least 90% of all native peasants are shifting cultivators or *ladang* tillers. As long as the population is small, and as long as there is an abundance of land and the old abandoned fields or *ladangs* have a chance to revert to forest, there are no serious objections to shifting cultivation. Over wide areas of Sumatra, Celebes and the Lesser Sunda Islands, however, the population has reached a density which begins to make the continuation of shifting culture undesirable, and, what is much more serious, the *ladangs* do not revert to forest but turn into grasslands as a result of fires which sweep the grass areas during the dry season. Therefore the foresters of Netherlands India view the problem of the destruction of the primeval and secondary forest and the spread of steppe vegetation in certain parts of the Outer Provinces with great concern. From this standpoint the Outer Provinces can be divided into two parts: the "developed" Outer

Provinces, i.e. Sumatra, Celebes and the Lesser Sunda Islands, with a total population of 17,000,000 and an average density of 20 persons per square kilometer; and the "undeveloped" Outer Provinces, i.e. Borneo, New Guinea and the Moluccas, with a total population of 2,000,000 and a density of 1 person per square kilometer. In the following discussion the "undeveloped" Outer Provinces are neglected because here the forest accounts for about 92% of the soil cover. In the "developed" part of the Outer Provinces, however, the forest accounts for about 70%, including secondary forest, but for only 60% if the primeval forest alone is considered. Assuming that 30% of the primeval forest should be preserved, there would be only 29,400,000 hectares of primeval and secondary forest left for the future clearings of shifting cultivators. Taking 0.3 hectare as the amount of land required per capita, then the 17 million natives would require 5,100,000 hectares of *ladangs*. On the assumption that each *ladang* is used for an average of 5 years, the crop area must be divided by 5 in order to get the annual requirement of about 1,000,000 hectares of forest. Thus the reserve of about 30,000,000 hectares of forest land would be sufficient to meet the requirements for new *ladangs* for 30 years. Of course, a certain percentage of the *ladangs* reverts to forest and can be cleared again after about 10 or 15 years. Other authors have estimated that the forest reserve allows a continuation of the clearing and burning process for 50 years, which does not alter the situation materially. Because of the great increase of population in the Outer Provinces, the demand for *ladangs* has become so great that it has endangered soil fertility, and the conclusion is that very soon it will be necessary to stop the practice of shifting cultivation in Sumatra, Celebes and the Lesser Sunda Islands, and show the natives ways and means of cultivating their fields permanently.

Foresters in Java have worked out one method of transition from the *ladang* culture to a regulated forest-field economy, the so-called *taungya* system, which is also used in Assam and Burma. After a stand of teakwood has been cut, peasants plant young teak trees and have the right to grow upland rice, maize and other crops, except cassava, for one or two years. It should be possible to employ the shifting cultivators of the Outer Provinces in the same way and persuade or force them to reforest their fields before abandonment. In Sumatra and Borneo the natives have, on their own, planted their old *ladangs* with hevea trees so that there are today 680,000 hectares planted with hevea and owned by 788,000 native growers. The *taungya* system would guarantee reforestation and prevent soil erosion and the degradation of former forest land to steppes.³

Crop Area: (a) Native Crop Area in Java and Madura: The native peasants of Java and Madura are primarily concerned with the production of food crops for domestic consumption. In 1937 they had 6,431,369

³ See: Fidmann, Franz Erich, "Die Aufgaben der Forstwirtschaft bei der Lösung bevölkerungspolitischer Probleme in tropischen Ländern unter besonderer Berücksichtigung der Verhältnisse in Niederländisch-Indien," *Zeitschrift für Waldforstwirtschaft*, Bd. V, 8, Mai 1938, pp. 527-537. Gonggrip, J. W., "Soil Management and Density of Population in the Netherlands Indies," *Comptes Rendus du Congrès International de Géographie*, Amsterdam, 1938, Tome II, Sect. III c, Leiden, 1938, pp. 397-404.

hectares at their disposal or 0.16 hectares per capita. Of this area 3,362,424 hectares were *sawahs* or irrigated fields, and 3,068,945 *tegals* or upland (non-irrigated fields).⁴ *Sawahs* account for 52.3% and *tegals* for 47.7% of the crop area. Rice is the leading crop of the natives and occupies 45.1% of the crop hectare area, with maize, 22.9%, second in importance, so that the two cereals together take up about 70% of the crop area. Root crops account for an additional 14%, with cassava in the lead; pulses—peanuts, soybeans and others, 9%; and tobacco, 1.7%.

TABLE 71. NETHERLANDS INDIA: CROP HECTARE AREA OF THE PRINCIPAL NATIVE CROPS IN JAVA AND MADURA⁵
(In thousand hectares and percentages of total area)

CROPS	1925-29 AVERAGE		1930-34 AVERAGE		1935		1938	
	Area	%	Area	%	Area	%	Area	%
Cereals								
Sawah rice	3,007	40.0	3,224	40.5	3,396	40.4	3,571	40.7
Upland rice	429	5.7	430	5.4	387	4.6	389	4.4
Maize	1,837	24.4	2,008	25.2	2,087	24.8	2,006	22.9
Total	5,273	70.1	5,662	71.1	5,870	69.8	5,966	68.0
Root Crops								
Cassava	743	9.9	707	8.9	789	9.4	948	10.8
Sweet potatoes	159	2.1	154	1.9	205	2.4	184	2.1
Potatoes	20	0.2	19	0.2	15	0.2	8	0.1
Other root crops	110	1.5	101	1.3	117	1.4	122	1.4
Total	1,032	13.7	981	12.3	1,126	13.4	1,262	14.4
Pulses								
Peanuts	208	2.8	212	2.7	195	2.3	262	3.0
Soybeans	187	2.4	238	3.0	307	3.7	380	4.3
Other pulses	208	2.8	224	2.8	234	2.8	196	2.2
Total	603	8.0	674	8.5	736	8.8	837	9.5
Tobacco	154	2.0	152	1.9	147	1.8	147	1.7
Other native crops	465	6.2	494	6.2	523	6.2	556	6.3
Grand Total	7,527	100.0	7,963	100.0	8,404	100.0	8,768	100.0

Native agriculture has made remarkable progress in the last century. Above all, the range of crops has widened. For hundreds of years rice, both wet and upland, millet, sweet potatoes and other indigenous root crops were the mainstay of the natives. The New World furnished three food crops, maize, cassava and peanuts, which today are of vital importance in the native economy. They can be grown as second crops after rice on *sawahs*, or as first or second crops on *tegals*, and they yield more than the old dryfield crops mentioned above. In many regions the natives have worked out crop rotation in order to combat soil deterioration on permanently cultivated *tegals*. Rotation is not

⁴ These figures were obtained from a private communication of the Centraal Kantoor voor de Statistiek. The figure of the total crop area and the figure for unirrigated fields do not include house compounds, fresh water ponds, and nipa groves. If we include these items, the total increases to 7,848,000 hectares and the area of unirrigated fields to 4,485,585 hectares.

⁵ Indisch Verslag.

necessary on *sawahs* if the irrigation water has nutritious minerals in its silt.

Population pressure in Java is so great that the peasants are forced to double crop. Wherever circumstances are favorable, a second crop, such as maize, sweet potatoes, cassava, soybeans, peanuts, tobacco or others, is grown during the dry season after the rice has been harvested. When irrigation water is available during the dry season, a second rice crop may be grown. Double cropping is also practiced, but less widely, on *tegals*. Table 72 compares the crop area with the crop hectare area, for both *sawahs* and *tegals*.

TABLE 72. NETHERLANDS INDIA: CROP AREA AND CROP HECTARE AREA IN JAVA AND MADURA, 1928-1937⁶

YEAR	SAWAHS			TEGALANS			TOTAL CULTIVATED AREA		
	Crop Area	Crop Hectare Area	Ratio of Double Cropping	Crop Area	Crop Hectare Area	Ratio of Double Cropping	Crop Area	Crop Hectare Area	Ratio of Double Cropping
1928	3,253,877	4,272,622	131 31	3,361,005	3,464,434	103 08	6,614,882	7,737,056	116 96
1929	3,267,515	4,075,036	124 71	3,386,000	3,253,058	96 07	6,653,515	7,328,094	110.14
1930	3,274,440	4,288,798	130 98	3,423,600	3,539,049	103 37	6,698,440	7,827,847	116 88
1931	3,287,549	4,205,059	127 91	3,421,075	3,492,625	102 09	6,708,624	7,697,684	114 74
1932	3,290,803	4,449,229	135 20	3,386,126	3,551,778	104 89	6,676,929	8,001,007	119 83
1933	3,298,567	4,653,879	141 09	3,408,874	3,664,843	107 51	6,707,441	8,318,722	124 02
1934	3,300,977	4,583,363	138 85	3,020,279	3,432,902	113 66	6,321,256	8,016,265	126 81
1935	3,311,278	4,733,467	142 95	3,033,911	3,679,826	121 29	6,345,189	8,413,293	132 59
1936	3,334,482	4,914,185	147 37	3,038,596	3,871,219	127 40	6,373,078	8,785,404	137 85
1937	3,362,424	4,830,938	143.67	3,068,945	3,877,744	126.35	6,431,369	8,708,682	135 41

Natives obtain a certain amount of food from the garden land around their houses where fruit trees and vegetables are grown. "In some districts of Java this mixed garden cultivation reaches a high level of intensive horticulture, and the products not only serve for the natives' own consumption but are sold on the markets."⁷ There is of course no double cropping possible on dry land which has perennial crops, such as cocoa, coconuts, tea, coffee, serah grass, fruit trees and rubber. The acreage of these crops is not included in Tables 71 and 72.

Although the government has made considerable efforts to increase the production of native agriculture sufficiently to secure the food supply of the native population, the native peasants have not been able to raise enough rice, the staple food of the country, and Java as well as the Outer Provinces has depended upon rice imports, except in 1936. The situation in regard to such other crops as maize, cassava, sweet potatoes, potatoes and peanuts has been better. One of the reasons why the rice production has increased in recent years is that the sugar industry has drastically reduced the amount of *sawah* which it rents from the natives.⁸

(b) *Native Crop Area in the Outer Provinces:* The extent of the area cultivated by native peasants in the Outer Provinces is not known, except for the islands of Bali and Lombok where about 529,000 hectares

⁶ Figures obtained from the Centraal Kantoor voor de Statistiek.

⁷ "Methods of Agriculture and the Reclaiming of Waste Lands and Swamps in the Netherlands Indies," *The Netherlands Indies*, Vol. VI, November 1938, p. 19

⁸ Valkenburg, S. van, "Agricultural Regions of Asia, Part IX, Java," *Economic Geography*, Vol. 12, 1936, pp. 27-44.

are cultivated and where the same crops are grown as in Java and Madura. For the rest of the Outer Provinces we can only estimate the crop area by multiplying the number of natives by 0.3 hectare, i.e. the average amount of crop land required per capita in the Outer Provinces. *Sawah* rice is not as important here as in Java. "Sumatra has only a few sections of the intensive type of land utilization, namely parts of the west coast, the Padang Highlands, the coast of Atjeh in the north and the Lampangs in the south. . . . In Borneo irrigated rice fields are limited to a number of coastal plains. . . ." ⁹ The place of *sawah* rice is taken by upland or *ladang* rice. Upland rice is sown with the digging stick in contrast to *sawah* rice which is transplanted from seedbeds to the fields. The yields of upland rice are considerably smaller and much less reliable than those of wet rice. Besides upland rice we find maize, cassava, sweet potatoes, potatoes (in the Karo highlands), peanuts (in Atjeh and Celebes) and tobacco (in the Karo highlands, Atjeh and South Sumatra) as annual crops on the fields of the natives.

TABLE 73. NETHERLANDS INDIA: PRODUCTION OF THE LEADING FOOD CROPS IN JAVA AND MADURA (SEED RESERVES DEDUCTED)¹⁰
(In percentages of the amounts required for consumption)

CROPS	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936
Rice (husked)	94.5	96.2	97.9	102.7
Maize	105.3	104.6	103.3	106.7
Cassava (fresh)	114.8	108.4	107.3	112.9
Sweet potatoes (fresh)	100.0	100.0	100.0	100.0
Potatoes	102.9	110.6	101.0	104.9
Peanuts (shelled)	125.9	125.8	129.4	143.2
Soybeans	53.8	69.7	99.5	101.7

Of increasing importance are the numerous perennial crops of the natives which reach the world market, but, with the exception of rubber, the size of the area devoted to them in the Outer Provinces is not known. Only the quantity of exported native produce is known. Most of these perennial crops are grown on old *ladangs*, the best-known example being rubber. Other important crops are coconuts; spices such as pepper (in Lampong, Banka and Billiton), cinnamon (in Sumatra) and cloves (in the Moluccas); kapok; and coffee (in Sumatra).

(c) *Estate Agriculture*: The extent, types of crops, production, types of tenure, labor conditions, etc. of estate or plantation agriculture (*ondernemings landbouw*) in both Java and the Outer Provinces are well known statistically. In 1938 there were a total of 2,402 estates in the Netherlands Indies with an area of 2,485,104 hectares of which 1,170,891 hectares were planted. Of these 2,402 estates 1,187, with a total area of 1,079,202 hectares and a planted area of 597,865 hectares, were in Java and Madura, and 1,215, with a total of 1,405,902 hectares and a

⁹ Valkenburg, S. van, "Agricultural Regions of Asia, Part VIII, Malaysia," *Economic Geography*, Vol. 11, 1935, p. 242.

¹⁰ *The Netherlands Indies*, Vol. V, No. 7-8, p. 3.

planted area of 573,026 hectares, were in the Outer Provinces. Table 74 reveals the geographic distribution of the plantations. The crop area of the plantations is about evenly distributed between Java and the Outer Provinces, but in the latter we observe a heavy concentration in Sumatra and in particular in the province of the East Coast of Sumatra, where 73% of the Sumatran crop area is located. Examining the total export figure of the Outer Provinces we observe the same predominance of Sumatra, which in 1938 accounted for about 72% of the value of the exports of the Outer Provinces, while the East Coast of Sumatra alone accounted for 32% of the Outer Provinces' export value and about 49% of the Sumatran.¹¹

TABLE 74. NETHERLANDS INDIA: GEOGRAPHIC DISTRIBUTION OF THE PLANTATION AREA IN 1938¹²

REGION	NUMBER OF PLANTATIONS	TOTAL AREA OF PLANTATIONS			PLANTED AREA OF PLANTATIONS		
		(Hectares)	Ratio to		(Hectares)	Ratio to	
			Sub-totals	Grand Total		Sub-totals	Grand Total
West Java	596	643,766	59.7	25.9	257,724	43.1	22.0
Middle Java	152	78,149	7.2	3.1	64,074	10.7	5.5
East Java	366	295,778	27.4	11.9	229,356	38.4	19.6
Native States	73	61,509	5.7	2.5	46,711	7.8	4.0
Total Java	1,187	1,079,202	100.0	43.4	597,865	100.0	51.1
Sumatra	607	1,249,850	88.9	50.3	515,887	90.0	44.1
Borneo	200	61,794	4.4	2.5	17,813	3.1	1.5
Other Outer Provinces	408	94,258	6.7	3.8	39,326	6.9	3.4
Total Outer Provinces	1,215	1,405,902	100.0	56.6	573,026	100.0	48.9
Grand Total	2,402	2,485,104		100.0	1,170,891		100.0

The principal export crops grown on the estates of the Netherlands Indies are rubber, sugar cane, coffee, tea, oil palms, cinchona and tobacco, which constitute about 88% of the crop area, if we disregard that area of these crops that is interplanted with other crops, and 93% if we include those hectares appearing twice in the statistics because of interplanting. The remainder of the planted area is divided among a large number of minor crops—frequently interplanted—such as cocoa, sisal, cantala, roselle, manila hemp, coca, essential oil crops, kapok and pepper. All of these minor crops are grown practically exclusively in Java, showing that Java grows a much greater variety of crops than do the Outer Provinces. Table 75 illustrates the distribution of the principal estate crops. Such old crops as sugar, coffee, tea, tobacco and cinchona are mostly grown in Java, while the more recently introduced rubber and oil palms are found especially in the Outer Provinces because they demand large areas, not to be had in Java.

¹¹ *Indisch Verslag*, 1939, p. 335

¹² *Indisch Verslag*, 1939

There is relatively little interplanting practiced in the Outer Provinces, in contrast to Java where about 90% of the area which is counted twice because it has two different crops is located.

TABLE 75. NETHERLANDS INDIA: DISTRIBUTION OF THE PRINCIPAL ESTATE CROPS¹³
(In hectares)

PERIOD	SUGAR (Cuttings and Grinding cane)	RUBBER	COFFEE	TEA	TOBACCO	CIN- CHONA	COCO- NUTS	OIL PALMS	OTHER CROPS	TOTAL CROPS (a)
<i>Java and Madura</i>										
1925-29 Average	203,108	206,692	95,712	90,675	27,985	17,107	8,368	595	55,341	645,975
1930-34 Average	144,469	228,490	96,478	101,740	29,576	15,842	6,934	724	59,916	634,390
1935	32,146	230,162	96,460	104,415	26,390	15,715	6,998	783	64,548	528,988
1936	42,822	230,074	93,036	104,652	26,008	15,516	6,859	788	64,349	541,430
1937	89,298	227,301	90,277	104,829	29,367	15,392	6,897	789	66,868	587,679
1938	90,543	228,911	88,585	105,054	28,809	15,179	7,391	890	68,073	597,865
<i>Outer Provinces</i>										
1925-29 Average	..	277,210	25,540	18,468	19,450	2,345	42,528	41,897	7,085	417,810
1930-34 Average	..	357,795	29,987	32,260	15,940	2,636	43,286	68,408	8,993	548,090
1935	..	365,147	23,973	33,816	11,518	1,892	42,511	74,136	10,631	553,688
1936	..	365,885	19,660	34,098	12,415	1,849	42,238	78,530	10,837	557,666
1937	..	366,435	16,894	34,205	13,013	1,831	42,249	82,484	10,514	562,824
1938	..	366,860	15,036	33,265	13,228	1,832	42,470	91,417	10,621	573,026
<i>Total Netherlands India</i>										
1925-29 Average	203,108	483,902	121,252	109,143	47,835(b)	19,452	50,896	42,492	62,426	1,063,785
1930-34 Average	144,469	586,285	126,465	134,000	45,516	18,478	50,220	69,132	68,909	1,182,480
1935	32,146	595,309	120,433	138,231	37,908	17,607	49,509	74,919	75,179	1,082,676
1936	42,822	595,959	112,696	138,750	38,423	17,365	49,097	79,318	75,186	1,099,096
1937	89,298	593,736	107,171	139,034	42,380	17,223	49,146	83,273	77,382	1,150,503
1938	90,543	595,771	103,621	138,319	42,037	17,011	49,861	92,307	78,694	1,170,891

(a) The various crop areas do not add up to the total, because they include interplanted areas which appear double, while the total does not include areas counted twice

(b) Error in source. Regional figures for 1925 given in *Export Crops* .. 1929 do not add to total given.

The world crisis had a most serious effect upon the sugar industry and the sugar area of Java. Up to 1931 the sugar area had increased rather steadily until it had reached an all-time high of about 200,000 hectares. The depression reduced this area to 28,000 hectares of grinding cane. The reason why Java, more than any other great sugar producer, was so seriously affected by the depression lies in the fact that Java depends entirely upon the "free market" for the distribution of its sugar crop. The competition in the "free market" is very severe and Java's market, which lies in the Far East, has deteriorated. For example, India has been expanding domestic production and has adopted protective measures; the Chinese market has been affected severely by the war; and the Japanese market has stopped accepting sugar from Java. In 1927-28 Java produced 18.7% of the world's cane sugar and 11.9% of both beet and cane sugar production. By 1934-35 Java's share of the cane sugar had decreased to 3.5% and of the total sugar crop to 2.1%. Since then Java's production has risen so that today the island produces about 7.5% of the world's cane sugar and 4.8% of the total sugar crop.

¹³ The *Export Crops of the Netherlands Indies*, Bulletin of the Central Bureau of Statistics.

Table 76 supplies the percentages of estate crops grown in Java and in the Outer Provinces.

TABLE 76. NETHERLANDS INDIA: PERCENTAGE DISTRIBUTION OF ESTATE CROP AREA BETWEEN JAVA AND THE OUTER PROVINCES, IN 1937 AND 1938¹⁴

CROP	1937		1938	
	Java	Outer Provinces	Java	Outer Provinces
Sugar	100.0	...	100.0	...
Rubber	38.3	61.7	38.4	61.6
Coffee	84.2	15.8	85.5	14.5
Tea	75.4	24.6	76.0	24.0
Tobacco	69.3	30.7	68.5	31.5
Cinchona	89.4	10.6	89.2	10.8
Cocoa	81.8	18.2	95.5	4.5
Coconuts	14.0	86.0	14.8	85.2
Oil palms	0.9	99.1	1.0	99.0
Sisal	70.0	30.0	70.3	29.7
Manila hemp	...	100.0	..	100.0
Essential oils	98.9	1.1	99.6	0.4
Kapok	94.2	5.8	94.6	5.4
Nutmeg	60.5	39.5	57.0	43.0
Pepper	91.1	8.9	92.2	7.8

In 1936 Java's sugar industry found itself with a plant about 50% too large in view of the existing sales possibilities. The only way out was a scrapping of the production apparatus to about 60% of what it had been. This serious reduction in the Javanese sugar industry affected the natives very severely because of the drastic drop in wages, leases and pound rents. The amount paid as wages decreased from 83,549,000 florins in 1931 to 7,097,000 florins in 1935 and rent payments dropped from 24,899,000 florins in 1931 to 3,898,000 in 1935.¹⁵

Land Tenure: While discussing land use in the Netherlands Indies a distinction had to be made between "native" and "estate" land use in Java and in the Outer Provinces. The same division appears in the land tenure conditions. Two principles characterize the agrarian policy of the government: protection of the native land and the promotion of large-scale agricultural industries.

(a) *Native Land Tenure in Java and Madura:* The literature on the question of native land tenure is very large—an indication of its complicated nature.¹⁶ It has been the principle of the colonial government to respect native land rights under customary law. For a long time, however, European ideas and interpretations frequently conflicted with the ideas of the natives on land tenure, and only slowly have we acquired a knowledge of the workings of the customary laws of the natives (*adatrecht*).

¹⁴ *Ibid.*

¹⁵ *The Netherlands Indies*, Vol. V, No. 2, 1937, p. 12.

¹⁶ See "Grond (Rechten op den)," *Encyclopaedie van Nederlandsch-Indië*, Tweede Druk, s'Gravenhage, 1917; and Vandenbosch, Amry, *The Dutch East Indies*, Grand Rapids, 1933, pp. 239-251.

As early as 1866 the government declared by proclamation that native land rights would be respected. This principle was again upheld in the Agrarian Law of April 9, 1870. The law declared at the same time, however, that all land not held in private ownership by natives was a part of the domain. But the native agrarian law does not know private ownership of land in the European sense, while at the same time it recognizes active and dormant rights unknown to the European mind. Thus the so-called domain declaration (*domeinverklaring*) has been the subject of a great controversy because it is claimed that it violates native land rights. In order to meet the *adatrecht*, a distinction has been drawn between "free" and "unfree" domain land. Unfree domain land can be cultivated by natives after permission has been obtained from the government.

The *adatrecht* recognizes communal possessions and hereditary individual possession. There are two types of communal possession, one with periodical redistribution of the land and the other with fixed shares. Communal possession does not extend over the *kampung* land, i.e. the garden land around the house, but only over the fields, both *sawabs* and *tegalans*. The Dutch regard the transition from communal to individual ownership as a necessary condition for the improvement of native agriculture, and since 1885 there have been regulations guiding this change. Communal ownership must be abandoned when three-fourths of the members holding rights in the communal lands demand individual possession. So far the natives have made little use of this provision. Instead they stop redistributing the land; this, according to native law, leads to individual possession.

Hereditary individual possession (*inlandsch bezitrecht*) is not to be confused with ownership. Although land held in individual possession is hereditary and can be mortgaged, the tribe or the village has the supreme right of disposal (*beschikkingsrecht*). Thus the occupant of the land cannot sell or mortgage the land to a stranger, i.e. to some one who is not a member of the tribe or the village. Hereditary individual possession can be converted into ownership by a recording in the land register and the issuance of a land title. So far little use has been made of this right of conversion because it is foreign to the *adatrecht*.

No native land can be sold to non-natives, i.e. Europeans, Indo-Europeans, Asiatics, etc. The natives have the right to rent not more than one-third of the village land at a time to sugar plantations. Nearly all sugar cane produced by plantations grows on leased land. The plantations practice a three-year rotation.

Tenancy is not as widespread as in China or Japan. In 1926 estimates were made in a number of districts and it was found that tenants accounted for 3.45% of all adult men, with the highest percentages in the residencies of Batavia, Besuki and Preanger. Usually the tenant turns half of the harvest over to the landlord. Tenancy is much more frequent in Java than in the Outer Provinces because of the growing population pressure in the former, whereas in the latter there is an oversupply of land, at least of unirrigated land. Thus, many of the tenants of Java do not even have land in the *kampung* and have to build

their houses on plots belonging to some one else ; such tenants are called *menoempangs*.¹⁷

TABLE 77. NETHERLANDS INDIA: NATURE OF THE NATIVE POSSESSION RIGHTS IN JAVA AND MADURA, 1932¹⁸
(In hectares)

CLASSIFICATION	SAWAHS	TEGALANS AND KAMPONGS
Appurtenances to village headmen, etc.	294,248	58,377
Free village property and irrigated fields set aside for special purposes (grazing grounds, etc.)	39,539	50,564
Land dedicated to religious purposes	727	2,878
Communal land, periodically redistributed	274,684	22,454
Land in permanent possession		
(a) but not transferable	549,043	344,196
(b) transferable only within a limited circle	105,192	15,324
(c) no limitations on transfer	1,867,808	3,809,672
Seawater fish ponds	...	69,255 (a)
Total, Java and Madura	3,131,241	4,303,465

(a) Not included in total.

(b) *Native Land Tenure in the Outer Provinces*: Native land tenure in the Outer Provinces, like that in Java, is regulated by the *adatrecht* which takes many forms. In principle we find the same forms described in Java, communal rights and individual possession. Much of the land is cultivated by shifting cultivators on the principle of the right of cultivation of wild land (*genotrecht van woeste gronden*). As soon as the cultivator abandons the *ladang* and makes a new clearing, he loses all rights on the old field. Should he, however, plant fruit or other trees on the *ladang*, then he acquires individual property rights as long as the trees survive. The ultimate right to the soil of a certain region belongs to a tribe or a village (*beschikkingsrecht*), on the basis of which the community preserves the rights of collecting wild products, hunting and cultivation for its own members.

There are no statistical data on the nature of land tenure in the Outer Provinces.

(c) *Western Land Tenure in Java*: Under the administration of the East India Company and in the early years of the colonial government, land was sold in order to help the company's treasury. The landlords not only acquired ownership of the soil but also manorial rights over the natives living on the land. Such lands, called "private lands," are found only in Java, especially around Batavia. Protection of the natives against the landlords has been difficult, and the government is buying and if necessary expropriating the land, whereby the ground rights of the natives living thereon are maintained.

¹⁷ See Scheltema, A.M.P.A., *Deelbouw in Nederlandsch Indie*, Wageningen, 1931, also published as *Mededeeling No. 18, Afdeling 1 landbouw van het Departement van Landbouw, Nijverheid en Handel*. See also *Encyclopaedie van Nederlandsch Indie*, Aanvullingen en Wijzingen, Afl. 32, 1932, pp. 1004-1013.

¹⁸ *Indisch V'erlag*, 1939, pp. 245-246.

One of the main purposes of the Agrarian Law of 1870 was to promote large-scale estate cultivation. The above-mentioned domain declaration supplied the government with land which it leases to entrepreneurs for periods not longer than 75 years (long-lease or *erfpacht*). Only Dutch subjects, residents of Holland or the Netherlands Indies, and companies established in Holland or in the Netherlands Indies can become long-lease tenants. The maximum size of a long-leasehold is 500 *bouws* or 390 hectares, but there are no restrictions as to the number of leaseholds any one person may obtain.

In the Native States (*Vorstenlanden*) the rulers regarded all land as their property. The native peasants had to pay rent and work a fixed number of days for the ruler, or the appanage holder if the land had been turned over to somebody else. Since the beginning of the nineteenth century entrepreneurs have rented such land, and with it they obtained the services of the peasants living thereon, who were therefore obliged to perform often as much as 250 days of labor on sugar land and 200 days on tobacco land, for which they received little or no pay. Since about 1920 this system has been changed. The estates are allowed to remain in possession of the land for a period of 50 years. During these 50 years the estate owners have to pay rent for the land they use. The rent goes to the native municipalities which have been created in these areas. Forced labor has been abolished.

Native villages are allowed to lease their land to estates if the leases are drawn up by a government official. Rice fields are usually leased for $3\frac{1}{2}$ years. There exists, however, the possibility of leasing rice fields up to $21\frac{1}{2}$ years if the fields return temporarily to the natives at fixed intervals, a system used especially by the sugar plantations, as mentioned above. Leases on *tegallans* can run up to a maximum of 12 years. The government determines the minimum rent for long-term intermittent contracts every five years.

The government also owns a number of estates in Middle Java. Table 78 lists the land belonging to estates according to the mode of tenure.

TABLE 78. NETHERLANDS INDIA: ESTATES IN JAVA AND MADURA,
ACCORDING TO THE MODE OF TENURE¹⁰
(In hectares)

CLASSIFICATION	1925-29 AVERAGE	1930-34 AVERAGE	1935	1938
Government estates	15,716	18,137	18,078	20,531
Estates privately owned	414,291	326,324	314,669	339,512
Estates on long leases	538,114	579,464	574,951	558,193
Estates hired from Native States	76,311	66,366	51,509	59,572
Estates leased from natives on short leases	207,114	146,046	52,000	101,394
Total	1,251,547	1,136,337	1,011,207	1,079,202

¹⁰ *Indisch Verslag*.

(d) *Western Land Tenure in the Outer Provinces*: In the Outer Provinces we find government estates, private estates, estates with long leases (maximum 5,000 *bouws* or 3,560 hectares), estates with short leases whose land is rented from natives, and finally, as a new form, the agricultural concession. Agricultural concessions are found only in the self-governing provinces of the Outer Provinces. Their conditions are very similar to long leases, their maximum size is 5,000 *bouws*, and their term is 75 years.

TABLE 79. NETHERLANDS INDIA: ESTATES IN THE OUTER PROVINCES CLASSIFIED ACCORDING TO THE MODE OF TENURE²⁰

(In hectares)

CLASSIFICATION	1925-29 AVERAGE	1930-34 AVERAGE	1935	1938
Government estates	9,926	21,350	13,476	10,679
Estates privately owned	590	870	741	741
Estates on long leases	402,872	497,760	454,696	452,774
Agricultural concessions	1,079,556	1,073,299	969,957	941,331
Estates leased from natives on short leases	...	...	401	377
Total	1,492,944	1,593,280	1,439,271	1,405,902

²⁰ *Ibid*

12. AUSTRALIA

"Seasons, soils and sales," and not "men, money and markets," form the trinity controlling land utilization in Australia.¹ The present system of land use is largely a response to these three controls, among which seasons, that is, such climatic factors as rainfall, its seasonal distribution, its reliability, the length of the dry season, temperature conditions, etc., take the first place, followed by such factors as topography and the quality of the soils.

Although nearly equaling the United States in size, the Australian continent falls far behind it in natural resources. Not quite one-third of the area lies north of the Tropic of Capricorn. More than 50% of the continent is dry country, so that Griffith Taylor speaks of an "empty" and an "economic" Australia.² The line that separates the two runs "from Geraldton, West Australia, passing near Kalgoorlie, Port Augusta, Broken Hill, and so north to the Gulf of Carpentaria."² Northwest of this line lies the dry country, which is either useless desert or purely pastoral land of an uneven quality. To the south and east we find the great farming belt, which extends from Cooktown in northern Queens-

¹ Wadham, S. M., and Wood, G. L., *Land Utilization in Australia*, issued by the Australian Institute of International Affairs, as a National Group of the Institute of Pacific Relations, under the auspices of the I.P.R., 1939.

² Taylor, Griffith, "The Resources of Australia," *Problems of the Pacific*, Conditie, J. B., ed., Chicago, 1928, p. 492. See also Taylor, Griffith, "Possibilities of Settlement in Australia," *Limits of Land Settlement*, prepared under the direction of Isaiah Bowman, New York, 1937, pp. 195-227. At the end of the above chapter there is a short bibliography, a more extensive bibliography is found in *The Australia Geographer*, Vol. II, No. 2, 1933; Vol. III, No. 2, 1936, and Vol. III, No. 3, 1937. An excellent summary is found in the paper by Madigan, C. T., "A Review of the Arid Regions of Australia and their Economic Potentialities," *Australian and New Zealand Association for the Advancement of Science*, Auckland, 1937, Vol. XXIII, Wellington, 1937, pp. 375-397.

land more or less parallel to the coast through New South Wales, Victoria and South Australia to Fowlers Bay. Western Australia southwest of the line from Albany to Geraldton³ also belongs to this agricultural belt.

It has recently been estimated that 55% of the land area is used for pastoral purposes, 40% is waste land, while 2% is forest and woodland and only 3% is crop and orchard land. Both Griffith Taylor and C. T. Madigan made estimates of the potential land use which are strikingly different from the present occupation.

TABLE 80. AUSTRALIA: PRESENT AND POTENTIAL LAND USE⁴
(In square miles)

CLASS	PRESENT LAND USE		POTENTIAL LAND USE, ESTIMATED BY			
			G. Taylor		C. T. Madigan	
	Area	Per cent	Area	Per cent	Area	Per cent
Pastoral land, good	1,636,250	55	1,009,000	34.0	1,689,800	56.8
Pastoral land, sparse			655,000	22.1		
Agricultural land	148,750(a)	5	716,000(b)	24.1	436,300	14.7
Useless	1,190,000	40	590,000	19.9	848,500	28.5
Total	2,975,000	100	2,970,000	100.0	2,974,600	100.0

(a) Includes forest area

(b) Suited as far as climate is concerned, but 215,000 square miles are too rugged to be used for agriculture.

The two estimates agree as regards vast potential areas but a comparison of the estimates of potential and actual land use reveals the Australian problem. Australia is still a new country, where land utilization is necessarily extensive and frequently not the most appropriate. As in all new countries, "the type of land utilization evolved tends towards a system of specialized agriculture very different from that of more densely settled older countries, such as Western Europe and Japan. Commercial farming, as distinct from subsistence farming, becomes the accepted system, and improvements in land utilization must proceed largely in accordance with the demands of such a system."⁵ As in all new countries, the variety of crops grown and of animals kept is small. Even today a few crops occupy most of the cultivated area of Australia, such animals as mules, asses and goats are negligible in number, and pig raising is still a rather neglected industry because it requires expert knowledge which "is comparatively rare in Australia, where, owing to 'extensive' exploitation of the land, the tendency has been to rely on the bounty of nature as expressed by pasture growth alone."⁶ Crops are chosen which require no great agricultural knowledge and livestock which demand no special care or daily attention. Dairying developed relatively late in Australia, and, in spite of its financial advantages to the pioneer, many who tried it failed because "the work of

³ See the maps in *Limits of Land Settlement*.

⁴ Taylor, Griffith, *Problems of the Pacific*, 1927, pp. 491-492; Madigan, C. T., *op. cit.*, p. 392.

⁵ Wadham and Wood, *op. cit.*, p. 328.

⁶ *Ibid.*, p. 225.

milking cows twice a day is unattractive on account both of its nature and of its monotony.”⁷

The present distribution of forms of land use is the result of a series of shifts or displacements. Pasturing was started in the coastal region by the early pioneers at the beginning of the 19th century. The sheep industry was subsequently pushed into the interior by the cattle industry, the cattle ranging zone was then invaded by wheat farmers and wheat was displaced in the wetter coastal areas of New South Wales and Victoria by maize and dairying—to mention only the outstanding displacements, each of which brought in an intensification of land use.

There are large areas in Australia that cannot be put to any other use than they now have because of climatic and other factors. Although over wide areas natural conditions would permit a change from extensive to intensive land use, transition will not come to these regions unless the world demand for primary products changes radically, or the Australian population increases considerably. As long as wool brings a good price, sheep raising will continue on land which could be brought under the plough, and so forth.

Wadham and Wood summarize their conclusions as to the future development of land utilization as follows:⁸

“1. As regards the interior areas with low rainfall (less than 10 inches annually in the south, and less than 18-20 inches in the north), there are no reasons to expect any further development for agricultural purposes. On favourable soils there may be some increase in the amount of occasional cropping in conjunction with livestock industries, but there is no prospect of such industries becoming farming localities in the accepted sense.

“Unless care is taken, there is a very serious danger that development in these dry areas may be retrogressive rather than progressive. Evidence suggests that stock-carrying capacity is tending to decline rather than rise, owing to deterioration in the grazing material. There is evidence that the exploitation of bore water supplies will require control in the future. It is undoubted that soil erosion is already a serious menace in some areas, and will become more dangerous in the future unless the rate of stocking is controlled. The alternative courses for much of this country are (a) it might be exploited to the limit, which would convert much of it into virtual desert—as many other regions of the world have been turned into deserts; (b) it might be exploited cautiously, under the care of experts who understand the vegetation and its capacity, and would be able to guard effectively against further deterioration. This would eliminate the danger of desert expansion, but might mean some reduction in monetary return. The present utilization is a mixture of these two types. There is little prospect of a more intensive utilization of this land.

“2. Irrigation projects have usually resulted in immense losses of capital; this has been partly due to a failure to realize the need for a careful examination of soils before submitting them to irrigation, and

⁷ *Ibid.*, p. 195.

⁸ *Ibid.*, pp. 323-328.

partly to insufficient attention to the details of irrigation practice. The possibility of an expansion of irrigation areas is sharply limited by the small number of streams with reliable annual flow which have not yet been harnessed. Doubtless numerous small schemes will be developed in the future, but irrigation offers no solution to the problem of the vast open spaces. One essential feature is lacking—the water.

"3. As regards the regions of better rainfall (10 inches or more annually in the south, 20 inches or more annually in the north), utilization of the exploitative type has proceeded rapidly in the past; in the words of an English expert:

'In the comparatively short time during which Australia has been developing her animal industries great progress has been made, and almost impossible things have been done in the clearing of bush country (which, for example, has not been necessary in other countries, such as the Argentine) and in fencing.'

"4. There are still millions of acres uncleared, but they are confined to regions in which 'the forest is too dense, the slopes are too steep, or the soils are too poor to warrant the expenditure for development.'

"5. The transition from exploitation to intensive utilization has been taking place gradually for some time. The extent to which this process is possible limits the future development of the only parts of Australia worth developing. . . .

"6. If the strict limits imposed upon settlement by the conditions set out above are admitted, the problem of closer settlement resolves itself into one of better utilization of that portion of the continent which is suitable for agriculture in the widest sense. Better utilization means little more than increased productivity per unit of cost. Care of the soil, planting of more productive crops, development of mixed-farm technique, and determination of the most efficient size of holdings, all take their place as aspects of better land utilization, and, even if there were no other complications, the problem in Australia would be sufficiently difficult."

TABLE 81. AUSTRALIA: UTILIZATION OF LAND MAINLY DEVOTED TO AGRICULTURE, 1929-30^a
(In acres)

TYPE OF UTILIZATION	AREA	PER CENT
Area under crops on arable land	21,536,592	51.4
Vineyards, olive groves, orchards and fruit gardens	393,129	0.9
Total area under crops	21,929,721	52.3
Fallow land	8,873,169	21.2
New ground cleared during season and previously cropped land unused during season	11,120,729 (a)	26.5
Total	41,923,619	100.0

(a) Victoria not included.

^a *The First World Agricultural Census, Bull. No. 6, Commonwealth of Australia, International Institute of Agriculture, Rome, 1936, p. 12.* The crop area in 1936-37 was 20,602,600 acres, a slight drop in comparison to 1929-30.

Closer Settlement: The Australian governments are becoming aware that there is little crown land left in the southeastern states and as a consequence they are beginning to favor intensification rather than extension of land use. A good deal of the alienated land is suitable for intensive utilization, but the great landowners oppose parcellation, introduction of more intensive land use methods and closer settlement. In order to deal with the opposition of the big landowner the Closer Settlement Acts were passed at the beginning of the present century. They give the authorities the opportunity of buying, and if necessary expropriating, large estates and of dividing these into small holdings. By June 30, 1938, the various Australian governments had acquired 8,453,978 acres of land and had divided them into 25,295 holdings.

Crop Area: The total area mainly devoted to agriculture was estimated at about 42,000,000 acres in 1929-30, of which, however, only half was actually under crops. Wheat is the foremost crop and occupied nearly 63% of the crop acreage in 1937-38. The only other crop that takes up more than 10% of the total acreage is hay.

TABLE 82. AUSTRALIA: DISTRIBUTION OF CROPS, 1937-38¹⁰

CROP	THOUSAND ACRES	PER CENT OF TOTAL AREA
Wheat	13,735	62.57
Oats	1,408	6.41
Maize	320	1.46
Barley	625	2.85
Hay	2,982	13.58
Green forage	1,640	7.47
Potatoes	114	0.52
Sugar cane	358	1.63
Orchards	277	1.26
Vineyards	125	0.57
All other	368	1.68
Total	21,952	100.00

The crop area is distributed among the Australian states as follows: New South Wales 28.9%, Victoria 21.4%, Queensland 7.3%, South Australia 22.2%, Western Australia 18.9% and Tasmania 1.3%, while the Northern Territory has only a negligible amount.

Pastoral Areas: Australia as a whole is better suited to pastoral than to agricultural land use. Although we can expect a further extension of agriculture, three-quarters of Australia is probably too dry and hot for agricultural pursuits. Most of this dry, hot country can carry some livestock, although a part of Central Australia is too dry for any. Sheep and cattle raising are the two great livestock industries of Australia. In 1938, there were 109,347,000 sheep and, in 1937, 13,078,000 head of cattle on Australian pastures. Australia is the leading wool-producing country of the world and its share in world production is about 25%. The present distribution of the sheep industry is largely the result of experience gathered over a long period, and it is probable that over the

¹⁰ Official Year Book of the Commonwealth of Australia, No. 32-1939.

greater part of the continent sheep-grazing has been pushed very near to the limits imposed by climatic and other conditions; but in the field of intensification there is room for improvement. Such means as top-dressing of pastures, construction of more water reservoirs, conservation of fodder and hand-feeding in lean months, and further fencing would increase the carrying capacity of the present sheep pasture. New South Wales is the leading sheep state, supporting on its pasture 46.2% of the Australian flocks; Queensland has 19.7%, Victoria 16.5%, South Australia 7.8%, Western Australia 7.6% and Tasmania 1.9%, while the Northern Territory has a negligible number. Most of the sheep are concentrated in a belt running through New South Wales and Victoria and covering the highlands and their western slopes.

In the cattle industry we have to distinguish between dairy and beef cattle. Dairy cattle require rich pastures and are therefore found especially in the coastal belt of the eastern states from southern Queensland to Victoria, while beef cattle have a much wider range. In all areas where sheep can be raised cattle are also found; cattle, however, being hardier and able to go twice as far for water as sheep, have a wider range of distribution. Most of the beef cattle are raised in the northern half of the continent, that is in Queensland, the Barkley Tableland and the Victoria River District of the Northern Territory, and the area between the Ord and Fitzroy rivers in the Kimberley district of Western Australia. In the southern half of the continent cattle are more or less concentrated in New South Wales, Victoria and South Australia. The leading cattle state is Queensland with 44.1% of the total stock; New South Wales follows with 24.9%, Victoria with 14.9%, the Northern Territory with 6.3%, Western Australia with 5.9%, Southern Australia with 2.4% and Tasmania with 1.9%.

Forest Land: Deforestation always accompanies the development of a new country and Australia is no exception. Agricultural pioneers are responsible for a vast amount of uneconomical destruction of forest resources. The results of deforestation are already affecting the flow of the rivers and have caused both gully and sheet erosion. This has forced the formulation of a forestry policy which struggles with two problems: (a) the reservation of sufficient purely timber country to provide an adequate supply of forest products for future needs; and (b) the reforestation and protection of the headwater areas of the streams upon whose undisturbed flow much of the prosperity of New South Wales, Victoria and South Australia depends. It has been estimated that the possible limit for permanent forest reservation in Australia is about 20 million acres or 31,250 square miles of forest land, which is about 1% of the total area. Permanent state forest reservations in June 1938 amounted to 17,792,000 acres, but a considerable portion consisted of cut-over lands or inaccessible mountainous country. The area of really productive forest has not been ascertained. The most valuable forest regions are found in the coastal areas, receiving 30 inches and more of precipitation in the temperate regions, and 70 inches and more in the subtropical north.¹¹

¹¹ See Wadham and Wood, *op. cit.*, Chapter XIV.

Land Tenure: By 1938 about 10% of the land area of Australia was alienated and owned, 50% was held under one kind of a lease or another, while about 40% was unoccupied. Table 83 gives details about the alienation and occupation of crown lands.¹²

TABLE 83. AUSTRALIA: ALIENATION AND OCCUPATION OF CROWN LANDS, 1937 AND 1938¹³
(In thousand acres and percentages of total area)

STATE	ALIENATED OR IN PROCESS OF ALIENATION		HELD UNDER LEASES		UNOCCUPIED		TOTAL	
	Thousand acres	%	Thousand acres	%	Thousand acres	%	Thousand acres	%
New South Wales	68,473	34.5	113,818	57.5	15,745	8.0	198,036	100.0
Victoria	32,755	58.2	5,901	10.5	17,589	31.3	56,246	100.0
Queensland	27,905	6.5	337,307	78.6	63,908	14.9	429,120	100.0
South Australia	15,391	6.3	127,437	52.4	100,416	41.3	243,245	100.0
West Australia	33,009	5.3	205,992	33.0	385,588	61.7	624,589	100.0
Tasmania	6,298	37.5	2,754	16.4	7,725	46.1	16,778	100.0
Northern Territory	478	0.2	183,056	54.6	151,583	45.2	335,117	100.0
Australian Capital Territory	105	18.3	307	53.6	171	28.1	583	100.0
Total	184,415	9.7	976,573	51.3	742,726	39.0	1,903,714	100.0

The classification of private holdings according to their size, as shown in Table 84, is of interest in relation to the efforts of Australian states to promote closer settlement. In 1928-29, 23.9% of the holdings included from one to fifty acres and only 4.3% of the acreage was in holdings of 50,000 acres or over.

TABLE 84. AUSTRALIA: NUMBER AND AREA OF PRIVATE HOLDINGS AND THEIR DISTRIBUTION ACCORDING TO SIZE¹⁴

CLASSIFICATION ACCORDING TO SIZE		HOLDINGS		AREA OF HOLDINGS		
		Number	Per cent of Total Holdings	Thousand acres	Average No of Acres per Holding	Per cent of Total Area
1 and under	50 acres	51,450	22.1	983	19.1	0.5
50 "	100 "	23,479	10.1	1,712	72.9	0.9
100 "	500 "	81,105	34.8	19,767	243.7	10.9
500 "	1,000 "	33,613	14.4	24,059	715.8	13.3
1,000 "	5,000 "	38,970	16.7	75,048	1,925.8	41.6
5,000 "	10,000 "	2,943	1.3	19,665	6,682.0	10.9
10,000 "	20,000 "	988	0.4	13,302	13,463.6	7.4
20,000 "	50,000 "	440	0.2	12,933	29,393.2	7.2
50,000 acres and over		137	0.1	13,101	95,627.7	7.3
Total		233,125	100.0	180,569	774.6	100.0

¹² Data on tenure conditions in Australia are scarce. Wadham and Wood were not able to deal with it. For a short discussion see: Wyane, William H., "The Development of Public Land Policy in Australia," *The Journal of Land and Public Utility Economics*, Vol. II, 1926, pp. 441-453; Vol. III, 1927, pp. 21-31.

¹³ *Official Year Book of the Commonwealth of Australia*, 1939, pp. 93-96. Data are given by states as of Dec. 31, 1937, or June 30, 1938.

¹⁴ *Ibid.*, 1939, p. 98. Includes holdings of one acre and over. No information available for the Northern Territory. New South Wales data for 1936-37; Victoria 1937-38; Queensland 1933-34, South Australia 1930-31; Western Australia 1937-38, Tasmania 1936-37, and Australian Capital Territory 1933-34. The figures for Queensland refer to freehold land and crown lands held in conjunction with freehold which are used for general farm purposes. Holdings used solely for pastoral purposes are not included.

More than one-fifth of all private holdings accounts for less than 1% of the alienated area, while 18.2% of the holdings include 73.3% of the alienated land.

13. NEW ZEALAND

New Zealand as a whole was originally forest covered, the result of a high average rainfall fairly evenly distributed throughout the year. Where edaphic or rainfall conditions prevented forest growth, however (as in the low-rainfall areas on the South Island in the rain-shadow of the Southern Alps and in the light-soil areas of the Central Plateau on the North Island), the native vegetation consisted originally of extensive tussock grasslands.¹ Moreover, forest has given way to grassland over wide areas, especially in the lowlands, and a part of the native tussock grasslands has been ploughed up and the native grasses have been replaced by European grasses such as perennial rye grass, white clover and cocksfoot.

Today New Zealand is essentially a pastoral country, with about 96% of its utilized land serving pastoral industries. Even the cultivated

TABLE 85. NEW ZEALAND: LAND CLASSIFICATION, 1939²

<i>(In acres)</i>		
Total Area		66,390,196
Total occupied area (1, 2, and 3)		42,901,272
1. Improved utilized area	19,721,949	
2. Unimproved area, partly utilized (a)	13,879,739	
Total utilized area	33,601,688	
3. Unimproved area, not utilized	9,299,584	

(a) Phormium, 57,602 acres; tussock and other native grasses, 13,822,137 acres.

TABLE 86. NEW ZEALAND: TYPES OF LAND UTILIZATION, 1939³

TYPE OF UTILIZATION	AREA IN ACRES	PER CENT OF TOTAL AREA
Artificially sown pasture grasses, not cut for seed, hay or ensilage	16,998,275	50.5
Artificially sown pasture grasses, cut for seed, hay or ensilage	665,637	2.0
Tussock and other native grasses	13,822,137	41.1
Total area under grass	31,486,049	93.7
Green fodder, roots and other feed crops (excepting grasses cut for hay and ensilage)	827,915	2.5
Other crops (a)	1,287,724	3.8
Total area utilized	33,601,688	100.0

(a) Orchards, 21,752 acres; private gardens, 81,482, plantations, 872,423, and fallow, 140,925.

¹ Cockayne, L., *The Vegetation of New Zealand*, 2nd ed., Leipzig, 1928.

² *New Zealand Official Year-Book*, 1940.

³ *Ibid.*

land produces crops that are used for the most part for fodder in the cattle, dairy and sheep industries. The total area of New Zealand is about 66,390,196 acres, of which approximately 42,901,272 acres are occupied (1939). From this latter figure, however, must be subtracted 9,299,584 acres which are not utilized, being barren or unproductive, or covered with fern, scrub and second growth, and native bush, so that the land used in one way or another amounts to 33,601,688 acres.

Another type of classification, more detailed in character, is presented in Table 87, which gives the area of holdings classified according to the purposes for which they were used, but includes the total occupied area, whereas Table 86 refers only to the utilized area. Table 87 shows that a total of 87.50% of all occupied land in New Zealand belongs to holdings that are practically exclusively devoted to the production and utilization of grasses and fodder crops. Such pursuits as general crop farming, fruit growing and market gardening occupy but very small areas.

TABLE 87. NEW ZEALAND: AREA DEVOTED TO PRINCIPAL AGRICULTURAL PURSUITS, 1929-30⁴

TYPE OF UTILIZATION	AREA IN ACRES	PER CENT
Dairy farming	3,484,646	8.03
Sheep farming	29,673,226	68.42
Mixed agricultural and sheep farming	1,992,023	4.59
Mixed dairying and sheep farming	2,801,162	6.46
General mixed farming	421,431	0.97
Fruit growing	37,279	0.09
Market gardening	10,859	0.03
Poultry farming	2,894	0.01
Nurseries and seed gardens	1,364	...
Timber growing	322,316	0.74
Flax growing	45,976	0.11
Idle and unused	1,898,715	4.38
Other and unspecified	2,676,762	6.17
Total	43,368,653	100.00

Grassland Farming: New Zealand is a paradise for the pastoralist. Thanks to a climate characterized by mild winters and wet summers of moderate temperatures, the country is ideally suited to the growth of grasses, both native and European. As grass grows in New Zealand practically the year around, supplementary feeding plays only a minor role and livestock can stay out of doors throughout the year, an enormous advantage in a country where labor is scarce and costly.⁵

⁴ *Ibid.*, 1939, p. 286.

⁵ Buchanan, R. Ogilvie, *The Pastoral Industries of New Zealand, A Study in Economic Geography*, The Institute of British Geographers, Publ. No. 2, London, 1935. Smallfield, P. W., "Grassland Farming in New Zealand," *Australian and New Zealand Association for the Advancement of Science*, Auckland, 1937, Wellington, 1937, pp. 272-275. A most valuable source of information is Belshaw, H., and others, *Agricultural Organization in New Zealand, A Survey of Land Utilization, Farm Organization, Finance and Marketing*, I.P.R. International Research Series, published for the New Zealand I.P.R. by the Melbourne Press, 1936. See also: Stapledon, R. G., *A Tour in Australia and New Zealand—Grassland and other studies*, Oxford University Press, 1928; Condliffe, J. B., *New Zealand in the Making*, University of Chicago Press, 1930; and Condliffe, J. B., "Problems of Land Settlement in New Zealand," *Pioneer Settlement*, American Geographical Society, Spec. Publ. No. 14, 1932, pp. 418-433.

Pastoralists utilize two major types of pasture: first, the natural, unimproved pasture, which falls into the two groups of (a) low tussock and (b) tall tussock grassland; and, second, the artificially sown pastures, which too can be divided into the two groups of (a) sown on cultivated land and (b) surface-sown after forest, scrub or fern burn. Tussock grasslands cover 14 million acres, and sown pastures occupy about 17 million acres, of which some 11 million acres consist of surface-sown pasture and 6 million acres of pasture sown on cultivated land. Pastures sown on cultivated land are in turn divisible into three classes: temporary pastures, short rotation pastures and long rotation pastures. The first is used to supply supplementary feed in summer or winter. Short rotation pastures are the dominant type of sown pasture in Canterbury, Otago and Southland, because of climatic conditions. The sown pastures are here a phase in the rotational system of farming, together with cereals and fodder crops. Long rotation and permanent pastures are found on better soils in the humid parts of the country and their carrying capacity has been greatly increased since the practice of top-dressing has been developed.

A large part of the surface-sown pastures has gradually deteriorated. Such European grasses as ryegrass, cocksfoot and clover have been replaced by native grasses such as *Danthonia pilosa*, or by fern and second growth.

Top-dressing and rotational grazing have become well-established practices in New Zealand. In 1937-38 nearly 4 million acres of grassland were top-dressed with fertilizer. In order that the grassland be utilized intensively it must be fenced into paddocks or enclosures. The more intensive and thorough the management the smaller the paddocks, which are intensively grazed in rotation for short periods. "It seems to be definitely established that not only does closely grazed grass grow more quickly, but that other benefits follow. For example, intensive grazing prevents the most palatable grasses from being picked out to the neglect of the others, which would thus be allowed to spread and ultimately to dominate the pasture to its detriment, and further, the earlier the growth stage of the grass the greater the nutriment it provides."⁶ This intensive utilization of pastures is not yet universal in New Zealand, especially not in sheep-raising areas, but it is common in dairying regions where on some of the farms "not only are the paddocks grazed in turn, but the grazing of each paddock for each continuous period is divided into three stages—the first devoted to dairy cows in milk, the second to dry dairy cows or beef animals, and the third to sheep."⁷

Crop or Arable Farming: Under "arable" farming come all crops that are produced by ploughing the land, cultivation, seeding and harvesting. Arable crops can be either cash crops or "fed-off crops." The New Zealand statistics thus include grasses, clovers and lucerne cut for seed, hay or ensilage in the list of field crops, where they represent the largest item, followed by turnips. The two important grains are wheat, which is usually threshed and milled, and oats, usually converted into chaff.

⁶ Buchanan, R. Ogilvie, *op. cit.*, p. 55.

⁷ *Ibid.*, p. 55.

Of the field crops grown in 1937-38 only 317,330 acres or 17.8% were grown for food or industrial purposes, while 1,387,540 acres or 77.7% served as fodder and 80,520 acres or 4.5% produced grass seeds. Thus even in the realm of crop farming the pastoral industries play the dominant role.

Until recently New Zealand imported considerable quantities of wheat in years of poor harvest, but now the government is attempting to increase the wheat production in order to make the country self-sufficient as far as wheat is concerned. To a large extent, however, the prices of lamb, mutton and wool determine the wheat acreage, which amounted to 300,000 acres in 1933 and to 193,000 acres in 1938-39.

TABLE 88. NEW ZEALAND: PRINCIPAL FIELD CROPS*
(In acres)

CROP	1925/6-1929/30 AVERAGE	1930/1-1934/35 AVERAGE	1935-36	1938-39
Wheat	226,853	272,852	252,423	193,332
Oats	324,724	371,526	363,296	279,796
Barley	23,395	27,978	27,777	32,528
Maize	9,763	14,418	17,126	12,229
Peas	16,092	20,671	24,428	13,436
Beans		158	177	85
Linseed	5,769	3,734	1,806	1,821
Potatoes	22,862	24,976	22,958	18,032
Turnips	469,157	475,458	441,854	385,846
Mangolds	11,186	11,489	13,210	8,872
Onions	746	963	928	674
Tobacco	627	1,589	1,518	1,807
Green fodder	222,738	192,075	207,212	189,601
Grasses and clover for seed	73,560	105,201	134,405	109,695
Grasses and clover for hay, ensilage, etc.	311,434	464,562	536,018	518,919
Lucerne		35,386	40,857	37,023
Other Crops	3,373	3,942	4,752	3,749
Total	1,722,279	2,026,978	2,090,745	1,807,445

Forest Land: At the time of the first European settlement, in 1840, 40,000,000 acres, or 60.7% of the total area, were under forest. By 1923 (the last estimate), however, the area under indigenous forest had been reduced to 12,600,000 acres or 18.9% of the area, to which should be added the area of the "exotic" forest, i.e. forest plantings of conifers, eucalyptus and other broad-leaved trees, which amounted to 872,423 acres or 1.3% in 1939.⁸ The total forest area accounts for about 20% of the total area, but the merchantable or commercial forest area, carrying more than 5,000 board feet to the acre, represents only 6% of the total area. Permanent and provisional state forests aggregated 8,345,000 acres in 1939, or 12.6% of the Dominion's area.

Land Tenure: The great bulk of the best land of New Zealand is in the hands of freehold owners, thanks to the tenurial policy which has

* New Zealand Official Year-Book

⁸ See Turner, E. Phillips, and Beasley, A., "Forestry in New Zealand," Belshaw, H., and others, *op. cit.*, pp. 562-604. See especially maps of forests in 1840 and 1928 on pp. 563 and 565.

favoured freeholdings and closer settlement. In addition to the freeholds there are several kinds of leaseholds, most of them on comparatively long terms. Table 89 classifies the total area of New Zealand, while Table 90 deals only with the occupied land and its tenure.

TABLE 89. NEW ZEALAND: LAND CLASSIFICATION ACCORDING TO TENURE, 1938 AND 1939¹⁰

TYPE OF TENURE	1938		1939	
	Acres	Per cent	Acres	Per cent
Total area sold or granted and held on freehold	21,863,161	32.9	21,911,380	33.0
Total area reserved for public purposes	15,803,560	23.8	15,897,883	23.9
Total area of crown lands leased under all tenures	17,337,455	26.1	16,755,074	25.2
Total area of crown lands available for future disposal	1,629,412	2.5	2,086,475	3.1
Total area of Native land	4,545,449	6.8	4,544,631	6.8
Land unfit for settlement, including rivers, lakes, roads, etc.	5,211,159	7.9	5,194,753	7.8
Total	66,390,196	100.0	66,390,196	100.0

TABLE 90. NEW ZEALAND: NUMBER AND AREA OF HOLDINGS AND THEIR DISTRIBUTION ACCORDING TO TENURE, 1930¹¹

CLASSIFICATION	NUMBER OF HOLDINGS		AREA IN ACRES		
	Absolute	Per cent	Absolute	Average per Holding	Per cent
Crown lease	11,901	14.0	10,147,898	852.7	23.4
Freehold	53,487	62.8	15,831,600	296.0	36.5
Private lease	7,050	8.2	1,075,400	152.5	2.5
Public bodies' lease	906	1.1	299,426	330.5	0.7
Maori lease	1,342	1.6	722,216	538.2	1.7
Mixed freehold and leasehold	9,752	11.4	14,754,571	1,513.0	34.0
Mixed leaseholds	729	0.9	537,542	737.4	1.2
Total	85,167	100.0	43,368,653	509.2	100.0

In 1930, nearly 63% of all agricultural holdings were freeholds and an additional 11.4% were combined freeholds and leaseholds. As the land held and farmed as freehold is in general the best land in the country, and as there is very little high-grade crown land left, new settlers looking for good land are forced to buy or lease it from private owners unless the state sees fit to exercise its powers of compulsory acquisition for subdivision delegated to it under the Land for Settlements and the Small Holdings Acts. Freeholds are associated with dairying and intensive farming whereas more extensive types of farming, as for example

¹⁰ *New Zealand Official Year-Book*, 1940, p. 371.

¹¹ *First World Agricultural Census, Bull. No. 4, New Zealand*, International Institute of Agriculture, Rome, 1935, p. 10. Such detailed information is not available for later years. Conditions, however, have not changed considerably since 1930.

sheep farming, are practiced on leaseholds. Table 91 shows the proportion of land under various kinds of tenure according to the type of utilization.

TABLE 91. NEW ZEALAND: PERCENTAGE OF LAND HELD UNDER DIFFERENT TENURES, CLASSIFIED ACCORDING TO THE TYPE OF UTILIZATION¹²

TYPE OF UTILIZATION	WHOLLY FREEHOLD	MIXED FREEHOLD AND LEASEHOLD	WHOLLY LEASEHOLD	TOTAL
Sheep farming	30	40	30	100
Mixed dairy and sheep farming	50	28	22	100
Mixed agriculture and sheep farming	57	22	21	100
General mixed farming	60	20	20	100
Dairy farming	66	11	22	100
Poultry farming	80	1	19	100
Orchards	85	7	8	100

Crown leases vary considerably, but certain principles prevail throughout: maximum areas are prescribed, conditions of occupation and improvement are stipulated and leases run for relatively long periods and are renewable after a revaluation. The modern "Renewable Leases" give almost complete security of tenure and are better than freeholds that "have been precariously financed on minimum deposits and maximum mortgages."¹³

Less significant, but still of some importance, is share-tenancy in New Zealand. It is mainly confined to dairy farms and is of two types. In the first, the landlord owns the land, the buildings and the plant, while the tenant supplies the herd and labor. One-third of the butterfat revenue goes to the landlord who also receives a portion of the other proceeds. The landlord, in addition, meets some of the fertilizer costs. In the second type, the landlord supplies all the capital, including land, buildings, plant and herd, and he may also supply the labor. In this type of share-farming, the landlord takes two-thirds of the net proceeds. In 1930, 781 holdings or 1% were operated by share-tenants.

TABLE 92. NEW ZEALAND: NUMBER AND AREA OF HOLDINGS AND THEIR DISTRIBUTION ACCORDING TO NATURE OF OCCUPANCY, 1930¹⁴

CLASSIFICATION	NUMBER OF HOLDINGS		AREA	
	Number	Per cent	Acres	Per cent
Owner or lessee	83,164	97.6	39,417,213	90.9
Manager	1,222	1.4	3,801,429	8.8
Share-tenants	781	1.0	150,011	0.3
Total	85,167	100.0	43,368,653	100.0

¹² Belshaw, H., and others, *op. cit.*, p. 178.

¹³ Williams, D. O., "General Characteristics of New Zealand Rural Economy," Belshaw, H., and others, *op. cit.*, p. 31.

¹⁴ International Institute of Agriculture, *op. cit.*, p. 11.

Size of Holdings: The size of land holdings varies from very large pastoral runs (crown leases), averaging about 15,000 acres and often as large as 50,000 acres, to small market gardens and orchards, ranging in size from 1 to 100 acres. Pastoral runs are composed of the country's poorest occupied lands, and are located chiefly on the South Island. They represent one-half of the total crown leases, and one-fifth of the total occupied land. Small grazing runs, averaging over 3,000 acres, comprise 14% of the total leases. If, however, we take all crown leases, disregarding the purpose for which they were taken up, we find that they average 855 acres. Freeholds average about 295, mixed freeholds and leaseholds about 1,500 acres.

Table 93 classifies all holdings according to size, but disregards the mode of tenure. Seventy-five percent of all holdings have less than 320 acres, or half a square mile, but these holdings include only 14%

TABLE 93. NEW ZEALAND: NUMBER AND AREA OF HOLDINGS AND THEIR DISTRIBUTION ACCORDING TO SIZE, 1939¹⁵

SIZE OF HOLDING IN ACRES	HOLDINGS		AREA		
	Number	Per cent of Total	Thousand Acres	Average Acres per Holding	Per cent of Total
over 1 and under 10	11,204	13.03	52	4.6	0.1
10 " " 50	14,745	17.15	375	25.5	0.9
50 " " 100	12,574	14.63	912	72.5	2.1
100 " " 200	16,436	19.12	2,299	139.9	5.4
200 " " 320	9,753	11.34	2,440	250.2	5.7
320 " " 640	10,217	11.88	4,619	452.0	10.8
640 " " 1,000	4,138	4.81	3,300	797.5	7.7
1,000 " " 5,000	5,870	6.83	11,537	1,965.3	26.9
5,000 " " 10,000	549	0.64	3,779	6,882.6	8.8
10,000 " " 20,000	289	0.34	4,051	14,016.7	9.4
20,000 " " 50,000	143	0.17	4,444	31,076.3	10.4
50,000 and over	55	0.06	5,094	92,609.1	11.9
Total	85,973	100.00	42,901	499	100.0

TABLE 94. NEW ZEALAND: AVERAGE SIZE OF HOLDING CLASSIFIED ACCORDING TO TENURE AND TYPE OF FARMING¹⁶

(In acres)

TYPE OF FARMING	WHOLLY FREEHOLD	WHOLLY CROWN LEASE	WHOLLY PRIVATE LEASE	MIXED FREEHOLD & LEASE	TOTALS ALL HOLDINGS
Dairy farming	108	119	90	144	105
Sheep farming	990	2,014	560	3,460	1,720
Mixed agriculture and sheep farming	415	370	300	585	425
Mixed dairy and sheep farming	375	365	295	600	412
General mixed farming	140	112	111	195	142
Orchards	25	27	11	46	26
Market gardens	9	13	14	17	12

¹⁵ New Zealand Official Year-Book, 1940, pp. 371-372.

¹⁶ Bebbshaw, H., and others, *op. cit.*, p. 181.

of the occupied area. It must be remembered, however, that this is the best and most intensively utilized land. The relation between type of farming, size and tenure of holding is shown in Table 94.

Excluding the relatively unimportant private leases, it is evident that farms operated under leaseholds are considerably larger than freehold farms only when they support an extensive type of farming (sheep), whereas the difference in dairy farms is not great. When it comes to mixed farming the freeholds exceed the crown lease farms in size.

14. CANADA

The Dominion of Canada, embracing the northern half of the North American continent with the exception of Alaska and the coast of Labrador (which belongs to Newfoundland), has a total of 3,694,863 square miles, of which 3,466,556 square miles represent the land area.

The two dominant types of primary economy in Canada are farming and lumbering.¹ Because of climatological, physiographic, geological and economic conditions, each of these two economies has areas in which it operates exclusively, whereas in other regions the two are in competition.

The natural vegetation of Canada is of three distinct kinds: tundra, forests and grasslands. The tundra formation (arctic and alpine) is limited to the highest parts of the Canadian cordillera together with the regions along the Arctic Ocean north of a line from the mouth of the Mackenzie River to Fort Churchill, and the Ungava Peninsula of Quebec. Grasslands, or prairie regions, comprise southern Alberta, southern Saskatchewan and the southwest corner of Manitoba. By far the greater part of Canada belongs to the forest formation, which extends from the Atlantic to the Pacific and from the International Boundary to the Arctic Circle and beyond into the valley of the Mackenzie. Variations in climate combined with physiographic, geological and soil conditions divide the forest belt of Canada into a number of rather distinct regions: Acadian, Great Lakes—St. Lawrence, Deciduous, Boreal, Subalpine, Columbia, Montane and Coast.² Each of these is characterized by certain trees. The Boreal forest region covers the bulk of the land and extends from the Atlantic to Alaska and the Mackenzie delta. Its trees are mostly coniferous; in a belt of transition to the prairie, however, the so-called Aspen Grove section, aspen is the dominant tree.

A large part of the more southerly forest regions, i.e. the Acadian, Great Lakes—St. Lawrence and Deciduous forest regions and the Aspen Grove section north of the prairies, is cleared and settled. The farmer or agricultural settler and the shifting lumberman have clashed frequently in areas where both wanted to utilize the resources—the settler the soil, and the lumberman the trees. For the lumberman the forest is the source of great wealth and he hates the settler who destroys forests with axe and fire, while the farmer hates the forest because it prevents him from raising his crops. Thus "the process of history in Canada

¹ The student of land utilization and settlement should make careful use of the 9 volumes of the series *Canadian Frontiers of Settlement*, edited by W. A. Mackintosh and W. L. G. Joerg, Toronto, 1934 and following years.

² Halliday, W. E. D., *A Forest Classification for Canada*, Forest Service, Bull. 89, Ottawa, 1937.

has been a race between lumberman and settler, and the only instances in which the lumberman has won have been in those districts in which settlement has proved impossible."³

It would have been ideal if everywhere in Canada a scientific survey for land use planning could have been made before the various areas came within the range of activity of settler and lumberman. In its absence settlers invaded many marginal and submarginal regions and, after a wasteful period of experimentation, were forced to leave, having destroyed the land's only wealth, the forest.

The spatial possibilities for agriculture in Canada are remarkably limited. The Laurentian Shield or the Laurentian Highlands, on the whole unsuited to agricultural settlement, separates the eastern and western agricultural areas. Only a minor part of eastern Canada is suited to farming: small areas in the Maritime Provinces, a narrow belt along the St. Lawrence, and the peninsula of southern Ontario.

In the Prairie Provinces agricultural settlement is limited to the southern part of the Canadian share of the great interior plain of North America. The Canadian great plain extends from the International Boundary northward between the Rockies on the west and the Laurentian Shield on the east, to the Arctic on either side of the mouth of the Mackenzie. The greater part of the settled area of the prairie provinces has a grass vegetation, but the railroads and the settlers have invaded the Aspen Grove section of the Boreal forest region as well as the latter itself to the north and east of the prairie belt. The main factor limiting the extension of agricultural settlement polarward is a climatic one—the length of the growing season. Fortunately the isotherms swing more or less from northwest to southeast through the prairie provinces, allowing the settlers to move up to the 60th parallel near the Rockies in Alberta and British Columbia, whereas in Manitoba they have to stay at least 5° further south.

It has been possible to push the polar limit of grain agriculture northward by means of the development of strains of early-maturing wheat, the staple of prairie farming. There is, nevertheless, a limit beyond which commercial grain farming cannot go. North of that limit agricultural settlers will have to depend upon local markets for the sale of their garden crops and livestock products. These markets are the mining communities.

In British Columbia the extension of agriculture is hampered by the rugged nature of the country and is limited to the valleys, especially that of the Frazer River, and the coastal plains.

Land Classification: Canadian government reports classify the total land area of Canada as present and potential agricultural lands, present and potential forest lands and lands which are lacking in surface resources. In the following discussion we shall disregard the Yukon and North West Territory because their forests and agricultural resources are negligible, while the size of the area affects percentage figures considerably.

³ Lower, A. R. M., "Settlement and the Forest Frontier in Eastern Canada," *Canadian Frontiers of Settlement*, Toronto, 1936, Vol. IX, pp. 29-30.

TABLE 95. CANADA - LAND AREA CLASSIFIED ACCORDING TO PRESENT OR POTENTIAL USE^a
(In square miles)

CLASSIFICATION	MANITOWA	QUEBEC	ONTARIO	MANITOBA	SAS KATCHUWAN	ALBERTA	BRITISH COLUMBIA	SUB-TOTAL FOR NINE PROVINCES	PERCENT OF NINE-TOTAL	YUKON & NORTH-WEST TERRITORY	TOTALS FOR CANADA INCLUDING YUKON & NORTH-WEST TERRITORY	PERCENT OF TOTAL
Agricultural land—												
(Present and potential)												
Occupied	15,671	27,038	35,689	23,644	86,989	60,991	5,534	254,866	12.7	7	254,873	7.3
Improved and pasture	6,823	17,663	29,342	20,489	81,508	54,817	3,640	213,232	10.6	4	213,236	6.1
Forested	9,243	9,430	6,347	3,155	5,481	6,084	1,894	31,534	2.1	3	41,637	1.2
Unoccupied	16,286	41,314	67,181	26,940	78,127	7,700	15,666	280,564	14.0	14,063	294,827	8.5
Grass, brush etc	3,106	1,314	1,181	10,950	15,127	30,740	5,760	74,778	3.7	10,063	84,841	2.4
Forested	12,580	40,198	60,190	16,000	23,000	45,000	9,406	205,986	10.5	4,000	209,986	6.1
Total agricultural land (a)	31,357	68,352	102,870	50,594	125,116	136,641	20,700 ^(b)	555,630	26.7	14,070	549,700	15.8
Forested land												
Productive	34,448	303,500	170,000	30,540	42,160	93,075	85,780	59,463	37.9	10,000	769,463	22.2
Unproductive	239	70,000	70,000	62,500	40,000	37,560	123,760	404,059	20.2	50,000	454,059	13.1
Total forested land	34,687	373,500	240,000	93,000	82,160	130,635	209,540	1,163,522	58.1	60,000	1,223,522	35.3
Net productive land (c)	45,221	392,422	275,523	124,439	178,795	216,192	218,940	1,451,532	72.5	70,067	1,521,599	43.9
Waste and other land (d)	5179	131,112	87,799	95,284	59,180	32,608	140,339	551,461	27.5	1,393,496	1,944,957	56.1
Total land area	50,400	523,534	363,282	219,723	237,975	248,800	359,279	2,002,993	100.0	1,463,563	3,466,556	100.0

(a) These totals embrace present agricultural land of all possible classes and land which has agricultural possibilities in any sense

(b) An estimate from provincial sources reports a tillable area of 6 626 square miles

(c) Total agricultural land plus forested land, minus forested agricultural land

(d) Includes open muskeg, rock, road allowances, urban land, etc

^a The Canada Year Book, 1939, p. 27.

According to the estimates in Table 95, about 535,000 square miles, or 26.7%, of the land area of the Canadian provinces is potential agricultural land, including grazing land and wood lots as well as arable land. Of this area, 254,866 square miles (163,118,720 acres), or 12.7% of the total, are already occupied, while 280,764 square miles of potential agricultural land are awaiting agricultural occupation. Professor Mackintosh has called this estimate "a gross exaggeration." "A careful survey in 1931 of the agricultural possibilities of the three Prairie Provinces of Manitoba, Saskatchewan and Alberta led the writer to the conclusion that there remained in those provinces at that time about 20 million acres of land available for agricultural occupation. This figure might have been increased by from 60 to 100% according to the amount of rough non-arable land which it was estimated might be used in conjunction with arable land, but the government estimate at that period was that there were available 105 million acres, a figure shown by careful survey to be a gross overestimate. Even of the land that remained for settlement in these provinces the great bulk was distinctly inferior to that already settled."⁵

TABLE 96. CANADA: UTILIZATION OF THE LAND BELONGING TO OCCUPIED FARMS, 1931⁶

CLASSIFICATION	AREA IN THOUSAND ACRES	PERCENTAGE OF TOTAL OCCUPIED LAND
Improved Area:		
Field crops	57,925	35.5
Pastures	8,012	4.9
Fallow	17,007	10.4
Vegetables and market gardens	104	0.1
Orchards	269	0.2
Vineyards	16	0.01
Small fruits	18	0.01
Other areas, including buildings	2,379	1.5
Total Improved Area	85,732	52.6
Unimproved Area:		
Woodland	26,645	16.3
Prairies and natural pastures	42,575	26.1
Marsh and waste land	8,162	5.0
Total Unimproved Area	77,382	47.4
Total Land in Occupied Farms	163,114	100.0

Utilization of the Occupied Area: In 1931 Canadian farms occupied 163,114,000 acres, of which not quite 50% was unimproved woodland, natural pasture, marsh and waste land. Table 96 shows the uses to which the land has been put in the occupied area.

Crop Area: The last agricultural census, taken in 1931, reported that in that year 57,925,483 acres were under field crops. Over three-fourths

⁵ Mackintosh, W. A., "Canada as an Area for Settlement," *Limits of Land Settlement*, pp. 71-72. See also by the same author: "Prairie Settlement, The Geographical Setting," *Canadian Frontiers of Settlement*, Toronto, Vol. I, 1934, pp. 232-234.

⁶ International Institute of Agriculture, *The First World Agricultural Census, Bull. No. 38, Canada*, Rome, 1938, p. 18.

of the crop area was given over to cereals which were to be cut for grain, while only 19% was to be utilized for the production of hay and fodder crops. These figures characterize Canadian agriculture which is predominantly a commercial grain agriculture.

TABLE 97. CANADA: DISTRIBUTION OF FIELD CROPS, IN 1931⁷

CROP	AREA IN ACRES	PER CENT OF TOTAL
Cereals cut for grain	45,450,025	78.4
Legumes used for grain	167,640	0.3
Tuber and root crops used for food or feed	734,920	1.3
Cultivated grasses used for hay	9,683,626	16.7
Grains cut for fodder purposes and fodder crops	1,138,310	2.0
Crops for industrial purposes	750,636	1.3
Other crops	326	...
Total	57,925,483	100.0

Of the 78.4% devoted to cereals as much as 45.5% was under wheat. Second to wheat came oats with 22.2%; barley followed with 6.5%, while all other grains represented only 4.2% of the acreage. Among the hay crops, timothy and clover took the lion's share.

Types of Farming: Agricultural practices vary according to environmental conditions. In the Maritime Provinces farmers go in for dairying and the growing of potatoes and fruits. The same three types of farming, dairying, mixed farming and fruit growing, are also found in Ontario and Quebec. Natural and economic conditions especially favor dairying. Fruit, vegetables and tobacco are grown in some districts of southern Ontario. Most of the Prairie Provinces is devoted to wheat farming. The drier parts of Saskatchewan and Alberta just north of the International Boundary are cattle ranch areas. Along the northern fringe of agricultural settlement the farmers engage in mixed farming. British Columbia with its mild climate favors intensive dairying in the Fraser Valley, fruit and vegetable growing, the raising of hops, and mixed farming. Irrigation is "practiced especially in two areas of southern Alberta: the Lethbridge and Brooks areas."⁸

Drought and Soil Erosion in the Prairie Provinces: After a period of slow growth from 1870 to 1900 agricultural settlement spread with an astonishing speed through the Prairie Provinces in the years 1900-30. At first the settlers preferred the zone of transition from the Boreal region to the true prairie, but in the period of the great rush they invaded even the semi-arid part or the "dry heart" of the prairie in southern Saskatchewan and southern Alberta when this was thrown open. This is an area of light deficient rainfall where only dry-farming with drought-resistant crops, especially wheat, holds any promise. In certain parts of the short-grass prairie even dry-farming fails and extensive grazing

⁷ *Ibid.*, p. 21.

⁸ Allen, William, "Types of Farming in Canada," *Scientific Agriculture*, Vol. 13, 1933, pp. 613-624. See also map of the Main Types of Farming in the *Canada Year Book*. A much more detailed study and classification of the types of farming is available for the Prairie Provinces and is found in, Canada, Dominion Bureau of Statistics, Bulletin XXXV, *Census of Prairie Provinces, 1936, Types of Farming*, Ottawa, 1938.

is the only possible form of land use. Good wheat crops and high prices in the first few years resulted in an ever-increasing expansion of the wheat acreage, so that even marginal and submarginal land was broken for crop production. Some of this land was subsequently abandoned, but a considerable acreage is still under cultivation, with little prospect of producing profitable crops.

From 1929 to 1937 the southern parts of Saskatchewan and Alberta and parts of southwestern Manitoba suffered severely from drought and soil drifting or wind erosion. These conditions led to serious reductions in yields if not to repeated complete crop failures, which forced large governmental expenditure to relieve the suffering of the settlers. In 1935 the Dominion Government finally passed the Prairie Farm Rehabilitation Act to provide for the rehabilitation of drought and soil drifting areas in the provinces of Manitoba, Saskatchewan and Alberta through the introduction of measures which control drought and soil drifting and establish land utilization on a sound economic basis.⁹ Lack of precipitation is beyond human control but a careful preservation of surface water through the construction of dugouts and dams greatly benefits farmers and ranchers. Soil drifting results in large measure from the practice of summer-fallow—essential over the greater part of the prairie for the conservation of moisture—because it provides large areas of bare land.¹⁰ As long as the land remained unbroken the grass vegetation protected the soil against wind erosion, but after a few years of cultivation the soil loses the fibrous material of the sod through decomposition, and drifting develops if the land is kept under "black-fallow," i.e. if it is cultivated at intervals to control weeds and thereby brought into a pulverized condition. Summer-fallowing practices must be improved. One of the best techniques is strip-farming, whereby the fields are divided into narrow strips running at right angles to the prevailing wind direction. In dry areas the strips are farmed in a two-year rotation, grain alternating with fallow. In areas where the land is to be fallowed only once in three years, two strips of grain alternate with fallow. There are two main methods of handling fallow—ploughed and ploughless summer-fallow. The principle in both is to leave as much stubble or other trash on the surface as possible, in order to preserve moisture, while still keeping the weed growth down. In areas where all the various attempts at control fail, the land is taken out of cultivation, regrassed and turned into community and reserve pastures. There is hope that rehabilitation measures will enable the farmers to withstand the inevitable periodic droughts.

Utilization of the Forests: The total forest area of the nine provinces, including forested agricultural lands, is estimated to be 1,163,522 square miles, or 58.1% of their land area. Most of the forest land on farms will probably continue to serve the farmers as wood lots. From 1,000,000 to 1,100,000 square miles are essentially forest land and best

⁹ See: Britnell, G. E., "The Rehabilitation of the Prairie Wheat Economy," *Canadian Journal of Economic and Political Science*, Vol. 3, 1937, pp. 508-29. Dickson, William, "The Prairie Farm Rehabilitation Program," *Canada Year Book*, 1938, pp. 223-230. Stewart, A., "The Prairie Farm Rehabilitation Programme," *Canadian Journal of Economic and Political Science*, Vol. 5, 1939, pp. 310-324.

¹⁰ Hopkins, E. S., and others, *Soil Drifting Control in the Prairie Provinces*, Dominion of Canada, Dept. of Agriculture, Bull. No. 179, N. S., Ottawa, 1935.

utilized as such. Of the 1,163,522 square miles of forest area, 759,463 square miles are considered productive, while 404,059 square miles are unproductive because of geographic location or unfavorable growth conditions. Only 359,548 square miles of the productive area have merchantable timber, however, while 399,915 square miles have young growth which, if protected, will produce merchantable stands. Table 98 gives detailed information for the various parts of Canada.

TABLE 98. CANADA: CLASSIFICATION OF FOREST LAND, 1938¹¹
(In square miles)

PROVINCES	PRODUCTIVE				UNPRO- DUCTIVE	TOTAL FOREST LAND	FOREST LAND, BY SIZE	
	Soft- wood	Mixed Wood	Hardwood	Total			Merchant- able	Young Growth
Maritime Provinces	17,054	12,373	5,021	34,448	239	34,687	21,338	13,110
Quebec	218,400	66,100	19,000	303,500	70,000	373,500	213,500	90,000
Ontario	65,000	83,000	22,000	170,000	70,000	240,000	56,100	113,900
Manitoba	10,950	6,220	13,330	30,500	62,500	93,000	4,615	25,885
Saskatchewan	8,900	9,395	23,865	42,160	40,000	82,160	7,305	34,855
Alberta	31,770	40,800	20,505	93,075	37,560	130,635	20,680	72,395
British Columbia	85,780	..	..	85,780	123,760	209,540	36,010	49,770(a)
Total Nine Provinces	437,854	217,888	103,721	759,463	404,059	1,163,522	359,548	399,915
Yukon and North West Territory	4,500	3,250	2,250	10,000	50,000	60,000	1,000	9,000
Total Canada	442,354	221,138	105,971	769,463	454,059	1,223,522	360,548	408,915

(a) Corrected by editor

Lumbering began in New Brunswick and Quebec and moved from there gradually through southern Ontario, along the Ottawa and its tributaries, around Georgian Bay into northern Ontario, and through the Lake of the Woods and Rainy River districts. It continues to be an important industry in these areas, with the exception of southern Ontario. North of the prairies the lumber industry has spread with settlement, but the industry supplies only the local demand. Since the beginning of the century and especially since the opening of the Panama Canal, lumbering has become important west of the Rockies, where logging operations can be carried out all the year around, whereas east of the Rockies the logging industry has a seasonal character. In eastern Canada the cutting and hauling of timber is done mostly during the fall and winter months.¹²

Land Tenure: ¹³ (a) *Forest Lands:* The general policy has been to dispose of timber by means of licenses to cut, rather than by selling timberland outright. Thus the state retains ownership of the land and control over the logging operations. In Canada as a whole only 8.7% of the forest land had been permanently alienated by 1935, whereas 91.3% was crown land (12.9% held under lease or license to cut and 78.4% not alienated in any form). Naturally the more heavily timbered and

¹¹ *Canada Year Book*, 1939, p. 27.

¹² See: Harrison, J.D.B., *Economic Aspects of the Forests and Forest Industries of Canada*, Dominion Forest Service Bulletin 92, Ottawa, 1938; International Institute of Agriculture, *International Year Book of Forestry Statistics, 1933-35*, Vol. II, *America*, Rome, 1938.

¹³ Martin, Chester, "Dominion Lands Policy," *Canadian Frontiers of Settlement*, Toronto, 1938, Vol. II, pp. 191-571.

accessible areas have been alienated so that, on the basis of the timber content, about 10% of the forest resources of Canada is in private hands, 40% is under license and 50% is still unalienated.¹⁴

(b) *Agricultural Lands: 1. Forms of Tenure:* In the following discussion we shall deal only with occupied agricultural land. Canadian statistics classify farm operators in four classes: (1) full owners, i.e. farm operators who own all the area which they operate, whether or not the farm is free of mortgage debt; (2) part owners and part tenants or owner-tenants, i.e. operators who own a part of the land and rent the rest; (3) managers, i.e. farm operators who operate the farm for others as hired managers; (4) tenants, who work rented land only. Tenants fall into two classes, cash tenants and share tenants. Table 99 classifies Canadian farm holdings from 1901 to 1931 according to tenure.

TABLE 99. CANADA: CLASSIFICATION OF FARM HOLDINGS
ACCORDING TO TENURE, 1901-1931¹⁵
(Number of holdings and percentages of total holdings)

TYPE OF TENURE	1901 (a)		1911 (a)		1921		1931	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Full owners	444,680	87.0	605,971	88.5	609,572	85.7	583,706	80.1
Managers	(b)		(b)		5,608	0.8	2,593	0.4
Owner-tenants	22,503	4.4	24,345	3.6	39,962	5.6	67,942	9.3
Tenants	43,890	8.6	54,013	7.9	55,948	7.9	74,382	10.2
Total number of holdings	511,073	100.0	682,329	100.0	711,090	100.0	728,623	100.0

(a) For comparison with 1921 and 1931, holdings under 1 acre have been deducted

(b) Not available

The rapid settlement of western Canada resulted largely from the easy way in which settlers could become owners of agricultural land. This easy acquisition of practically free land explains the high percentage of owners among Canadian farmers. There has been, however, a steady, slow decline of ownership since 1901 and a slight increase of owner-tenants and tenants. An examination of tenure conditions in the several provinces shows that in the Maritime Provinces, Quebec and Ontario the percentage of owners either has remained stable or has even increased, while the Prairie Provinces show serious changes between 1901 and 1931. Table 100 compares the three provinces with Quebec, which has been chosen as representative of eastern Canada. At the beginning of the century 93.6% of the holdings in the Prairie Provinces were owner-operated, 2.9% were run by tenants and 3.5% by owner-tenants. By 1931 the proportion of owners had decreased to 69.8%, whereas tenants had increased to 15.2% and owner-tenants to 14.9%.

¹⁴ *The Forests of Canada: Their Extent, Character, Ownership, Management, Products, and Probable Future*, Canada, Dept. of the Interior, Forest Service, Ottawa, 1935, and *International Year Book of Forestry Statistics, 1933-35* Vol. II, America, p. 21.

¹⁵ *Census of Canada, 1931, Vol. VIII, Agriculture*, p. 4.

What are the forces that have undermined the original character of tenure conditions in the prairie?¹⁶ Stewart lists the following factors as contributing to the increase of tenants: adverse climatic conditions; settlement on submarginal land; inflation of land values during the time of war prices for wheat and the ensuing deflation; increase in the amount of capital required to start a farm due to increases in land values and in the size of farms; and the substitution of capital equipment for human labor. Finally, the ethnic origin of the farmers is also associated with tenancy. "Whatever the chain of causation may be, there is plenty of evidence in the West that certain ethnic groups are associated with tenancy and others with ownership."¹⁷ In sections where continental European immigrants predominate, the proportion of tenants is smaller than in those where native-born Canadians or immigrants from the United States and Great Britain form the majority.

TABLE 100. CANADA: PER CENT DISTRIBUTION OF FARMS
BY TENURE, 1901-1931¹⁸

TYPE OF TENANT	1901	1911	1921	1931
<i>Quebec</i>				
Owners	89.8	92.2	94.9	93.1
Tenants	6.1	5.8	3.3	3.7
Owner-tenants	4.1	2.0	1.8	3.2
<i>Manitoba</i>				
Owners	88.9	83.4	82.0	70.1
Tenants	5.0	10.4	11.4	18.2
Part owners & tenants	6.1	6.2	6.6	11.7
<i>Saskatchewan</i>				
Owners	96.1	90.6	77.6	66.5
Tenants	1.6	3.7	10.8	15.4
Part owners & tenants	2.3	5.7	11.6	18.1
<i>Alberta</i>				
Owners	95.8	92.0	80.3	73.0
Tenants	2.2	3.8	9.7	12.1
Part owners & tenants	2.0	4.2	10.0	14.9

The main reason for increased owner-tenancy is the increase in the size of farms. "There are many economists and sociologists who look upon any further increase in tenancy at the expense of farm ownership with regret, but from the point of view of the farm operator, tenancy is not necessarily a condition to be deplored and if some changes are made in the form of lease agreement there need be neither social nor economic difficulties."¹⁹ One of the changes necessary is the abandonment of one-year leases, a practice which prevents any planning on the part of the tenants and leads to soil-mining.

Whereas in Canada as a whole cash and share tenancy are about equally frequent, the farmers of eastern Canada prefer cash rent, and the farmers of the prairie share rent.

¹⁶ Murchie, R. W., and others, "Agricultural Progress on the Prairie Frontiers," *Canadian Frontiers of Settlement*, Toronto, 1936, Vol. V, Chapter VII, pp. 84-131. Stewart, Andrew, "Farm Tenancy in Western Canada," *World's Grain Exhibition and Conference, Regina, Canada, Proc.*, Ottawa, 1933, Vol. I, pp. 303-307.

¹⁷ Murchie, *op. cit.*, p. 119.

¹⁸ *Census of Canada, 1931, Vol. VIII, Agriculture*, p. xiv.

¹⁹ Murchie, *op. cit.*, p. 129.

TABLE 101. CANADA: PER CENT DISTRIBUTION OF FORMS OF TENANCY, 1931²⁰

FORMS	TOTAL CANADA	QUEBEC	MANITOBA	SASKATCHEWAN	ALBERTA
Cash tenants	46.2	79.1	24.7	13.5	22.7
Share tenants	52.8	20.5	72.7	85.4	76.3
Cash & share tenants	1.0	0.4	2.6	1.1	1.0

Table 102 lists the acreage worked under the various forms of tenure.

TABLE 102. CANADA: DISTRIBUTION OF FARM AREA ACCORDING TO TENURE, 1931²¹

TYPE OF TENURE	AREA, IN ACRES	PER CENT OF TOTAL AREA	PER CENT OF NUMBER OF HOLDINGS
Full owners	104,932,697	64.3	80.1
Managers	2,128,452	1.3	0.4
Tenants, Total	20,032,353	12.3	10.2
Cash	6,316,354	3.8	4.8
Share	13,458,931	8.3	5.3
Cash and share	257,068	0.2	0.1
Owner-tenants	36,020,532	22.1	9.3
Grand Total	163,114,034	100.0	100.0

2. *Size of Holdings*: In eastern Canada farms are smaller in size than are those of western Canada. This is because of differences in climatic and economic conditions. In the east most of the farms are from 50 to 100 acres in size. In the prairies they run from 201 and over, while in British Columbia the most frequent size is from 11 to 50 acres.

TABLE 103. CANADA: NUMBER AND AREA OF OCCUPIED FARMS IN 1931 AND THEIR DISTRIBUTION ACCORDING TO SIZE²²

CLASSIFICATION	NUMBER OF FARMS	PER CENT OF TOTAL	AREA		
			Thousand acres	Average acreage per farm	Per cent of total
From 1 to 4 acres	19,713	2.7	48	2.4	0.03
" 5 " 10 "	24,028	3.3	179	7.4	0.1
" 11 " 50 "	80,070	11.0	2,768	34.6	1.7
" 51 " 100 "	148,255	20.4	12,866	86.8	7.9
" 101 " 200 "	233,306	32.0	36,285	155.5	22.2
" 201 " 299 "	35,620	4.9	8,630	242.3	5.3
" 300 " 479 "	103,247	14.2	34,531	334.5	21.2
" 480 " 639 "	36,738	5.0	18,404	501.0	11.3
640 acres and over	47,646	6.5	49,403	1,036.9	30.3
Total	728,623	100.0	163,114	223.9	100.0

²⁰ Census of Canada, 1931, Vol. VIII, p. XLIX.

²¹ The First World Agricultural Census, Bulletin 38, Canada, International Institute of Agriculture, Rome, 1938, p. 17.

²² *Ibid.*, p. 17.

15. UNITED STATES OF AMERICA, CONTINENTAL

Land Use: Planning Activities: In none of the other countries under consideration in this study have the problems of land utilization and land tenure attracted so much attention in the last decade as in the United States. Serious economic difficulties and disturbances, beginning in 1929, have led to the establishment of a number of planning boards and committees which have attempted to make inventories of the country's natural resources.

The second American conservation movement started in 1931 (the first one was under President Theodore Roosevelt¹) when the Secretary of Agriculture called a National Conference on Land Utilization to meet in Chicago. On the basis of a resolution of this Conference² the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use were appointed. The conservation movement came into full swing in 1933 when, on July 20, the Federal Emergency Administrator of Public Works appointed a National Planning Board and, on July 31, an Executive Order of President Franklin D. Roosevelt established the Science Advisory Board to act through the machinery and under the jurisdiction of the National Academy of Science and the National Research Council. The Science Advisory Board in turn appointed a Land-Use Committee, upon whose invitation Carl O. Sauer prepared a report on land resources and land use.³

The National Planning Board stimulated city, regional and state planning activities. In its final report it recommended the creation of a permanent national planning institution; this led to the establishment of the National Resources Board on June 30, 1934. The board was commissioned "to prepare and present to the President a program and plan of procedure dealing with the physical, social, governmental and economic aspects of public policies for the development and use of land, water, and other national resources and such related subjects as may from time to time be referred to the Board by the President." On December 1, 1934, the Board submitted its report, in which questions of land use are discussed very thoroughly.⁴

Of its report the Board states: "it is the first attempt in our national history to make an inventory of our national assets and of the problems related thereto," and it concludes: "it cannot be too strongly stated that we do not approach the planning of natural and other American resources in any spirit of defeatism. The present emergency may have

¹ *Report of the National Conservation Commission, with Accompanying Papers*, 60th Congress, 2nd Session, Senate Document No. 676, 1909, 3 vols.

² *Proceedings of the National Conference on Land Utilization*, Chicago, Ill., November 19-21, 1931, Washington, 1932.

³ Sauer, Carl O., "Preliminary Report to the Land-Use Committee on Land Resources and Land Use in Relation to Public Policy," Appendix 9, *Report of the Science Advisory Board*, July 31, 1933, to September 1, 1934, Washington, 1934, pp. 167-260.

⁴ National Resources Board, *A Report on National Planning and Public Works in Relation to Natural Resources and Including Land Use and Water Resources with Findings and Recommendations*, Washington, 1934. The Board received from its Land Planning Committee a series of 11 reports dealing with the various aspects of land use and land tenure: Part I, *General Conditions and Tendencies Influencing the Nation's Land Requirements*; Part II, *Agricultural Exports in Relation to Land Policy*; Part III, *Agricultural Land Requirements and Resources*; Part IV, *Land Available for Agriculture Through Reclamation*; Part V, *Soil Erosion, a Critical Problem in American Agriculture*; Part VI, *Maladjustments in Land Use in the United States*; Part VII, *Certain Aspects of Land Problems and Government Land Policies*; Part VIII, *Forest Land Resources, Requirements, Problems, and Policy*; Part IX, *Planning for Wild Life in the United States*; Part X, *Indian Land Tenure, Economic Status, and Population Trends*; Part XI, *Recreational Use of Land in the United States*.

hastened the growth of systematic planning, but the careful inventory and appraisal of our resources, and the consideration of how we may most effectively utilize these resources, could not in any case have been long delayed, after our frontier had been closed and the progress of mechanical invention established as a permanent factor in our civilization."

The report provides the framework of a national policy, into which further plans of federal and state agencies can be fitted, to guide public

TABLE 104. U.S.A., CONTINENTAL: MAJOR LAND USES, 1930⁵

CLASSIFICATION	AREA (Millions of acres)	PER CENT OF TOTAL LAND AREA
Total land area	1,903	100.0
I. Agricultural and forest lands		
A. All land in farms	987	51.8
Crop land:		
Crop land harvested	359	18.9
Crop failure	13	0.7
Idle or fallow land	41	2.1
Total crop land	413	21.7
Pasture land:		
Plowable	109	5.7
Not plowable	270	14.2
Total pasture land	379	19.9
Woodland:		
Pastured	85	4.5
Not pastured	65	3.4
Total woodland	150	7.9
All other farm land	45	2.3
B. All land not in farms	786	41.3
Forest and woodland:		
Grazed:		
Public	106	5.6
Private	143	7.5
Total grazed forest & woodland	249	13.1
Not grazed:		
Public	57	3.0
Private	151	7.9
Total ungrazed forest & woodland	208	10.9
Grazing land (not in forest or woodland): (a)		
Public	235	12.3
Private	94	5.0
Total grazing land	329	17.3
II. Land of non-agricultural non-forest use (urban lands, golf courses, cemeteries, railroad rights of way, parks, refuges, roads)	53	2.8
III. Land of little or no use (deserts, rocks and barren land, swamp, beaches and dunes)	77	4.1

(a) Corrected according to statement on p. 108 of source.

⁵ National Resources Board, *A Report on National Planning*, . . . , p. 109.

works programs and the utilization and conservation of the nation's natural resources.⁶

Since 1933 a number of federal agencies have been set up whose task it is or was to carry through the recommendations of the National Resources Board and to continue planning activities. Examples are the Agricultural Adjustment Administration, the Resettlement Administration—whose work was divided in September 1937 between the Farm Security Administration and the Bureau of Agricultural Economics—and the Soil Conservation Service. All of these have or had divisions concerned with land utilization, which have produced numerous studies on various aspects of the land problem.⁷

Major Forms of Land Use: The total land area of continental United States (excluding Alaska) is 1,903,000,000 acres. In 1930, 21.7% was crop land; 37.2% was grazing land (which does not include grazed forest and woodland, amounting to 13.1% and listed under forest land); 31.3% was forest land (also partly grazed); the remaining 9.2% was land under farm roads, farmsteads, lands of non-agricultural, non-forest use, and lands of little or no use. Table 104 classifies the land area according to use.

Farms occupied 987 million acres, or 51.8%, which they utilized for agricultural, grazing or forest purposes. An area of 786 million acres, or 41.3% of the country, does not belong to farms but has economic value either as grazing or forest land or both. Only 130 million acres, or 6.9%, has neither agricultural nor forest value, but is occupied by cities, golf courses, cemeteries, railroads, highways, parks, game and bird refuges, deserts, barren areas, swamps, tidal marshes, beaches and dunes.

The Board Report also presents an estimate of major uses of land for 1960. "Looking to the future, it appears that the estimated prospective increase in population is likely to involve a slight increase in crop land, a decrease of pasture land and of forest in farms, if past trends continue, an increase in forest not in farms, more and more of which seems likely to pass into public ownership, and a notable increase in land devoted to recreational purposes. The increase in crop land will be the net result, as in the past, of decreases in some areas, mostly hilly or eroding lands, or sandy or infertile soils, and increases in other areas inherently more fertile or less exhausted of their fertility, or otherwise more productive, or which can be made productive by reclamation."⁸

Land Classification According to Productivity: The Soil Survey of the Bureau of Chemistry and Soils classified the lands of the United States according to their relative productivity, distinguishing five grades as

⁶ See: Joerg, W. I. G., "Geography and National Land Planning," *Geographical Review*, Vol. XXV, 1935, pp. 177-208. Since the Board was established under the National Industrial Recovery Act, it had to be replaced on June 15, 1935, by the National Resources Committee, when the NIRA was declared unconstitutional.

⁷ The student of land use should examine the files of the *Land Policy Review*, February 1935 to March 1935, published by the Agricultural Adjustment Administration, continued from June 1935 to August 1937 as *Land Policy Circular* published by the Resettlement Administration, continued from September 1937 to April 1938, under the same title first by the Farm Security Administration and later by the Bureau of Agricultural Economics; and continued since then by the latter as the *Land Policy Review*. Further valuable sources are: Van Hise and Havemeyer, *Conservation of Our National Resources*, New York, 1930; Gustafson, A. F., and others, *Conservation in the United States*, Ithaca, 1939; Parkins, A. F., and Whitteker, J. R., editors, *Our Natural Resources and Their Conservation*, 2nd ed., New York, 1939.

⁸ National Resources Board, *A Report on National Planning* . . . , p. 108

given in Table 105. The productivity ratings are based on the ability of the land to produce crops under a given intensity of management or farm practice. Soil type, topography, rainfall and temperature are taken into consideration, but not irrigation, additional drainage or the application of lime or of fertilizer other than nitrogen fixed by legumes. Grade 1 includes land considered excellent for staple crops climatically adapted to the region where such soil is found; grade 2 is good; grade 3, fair; grade 4, poor; and grade 5 is essentially incapable of cultivation.

TABLE 105. U.S.A., CONTINENTAL: PRELIMINARY CLASSIFICATION OF LAND PRODUCTIVITY⁹

GRADE OF PRODUCTION	ACRES	PER CENT OF TOTAL
Grade 1	101,038,000	5.3
Grade 2	210,935,000	11.1
Grade 3	345,872,000	18.1
Grade 4	362,559,000	19.1
Grade 5	882,735,000	46.4

Grades 1 to 4, estimated at 1,020,404,000 acres or 53.6% of the land area, may be regarded as capable of producing field crops without irrigation, when cleared. Grade 4, however, comprising about 363 million acres, or 19.1%, has such a low productivity that cultivation is undesirable except where favored by compensating economic advantages, such as nearness to markets or cheap transportation. Not quite half of the total area of the United States is included in Grade 5; that is, it is incapable of producing cultivated crops because of aridity, poor drainage, rough surface or shallow or sterile soils.¹⁰

TABLE 106. U.S.A., CONTINENTAL: CLASSIFICATION OF FARM LAND ACCORDING TO USE¹¹

(In millions of acres and in percentages of total area)

CLASSIFICATION	1909		1919		1929		1934	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Crop land harvested	322	36.6	362	37.9	359	36.4	296	28.0
Crop failure and crop land idle or fallow	25	2.8	40	4.2	54	5.5	120	11.4
Pasture, both plowable and other	284	32.3	328	34.3	379	38.4	410	38.9
Forest and cut-over land	191	21.7	168	17.6	150	15.2	185	17.5
Farmsteads, lanes and waste	57	6.6	58	6.0	45	4.5	44	4.2
Total land in farms	879	100.0	956	100.0	987	100.0	1,055	100.0
Percentage of total land area	46.2		50.2		51.9		55.4	

Land in Farms: Today a little more than half of the country's land belongs to farms. Of this farm land, 39.4% was crop land in 1934

⁹ *Ibid.*, pp. 126-127.

¹⁰ See also *Atlas of American Agriculture*, prepared under the supervision of O. E. Baker, U.S. Dept. of Agriculture, Washington.

¹¹ Baker, O. E., *A Graphic Summary of Physical Features and Land Utilization in the United States*, U.S. Dept. of Agriculture, Misc. Publ. No. 260, Washington, 1937, p. 49.

(including crop failures and crop land idle or fallow); 38.9% was pasture (excluding woodland pasture); 17.5% was forest and cut-over land, a part of which served also as pasture; and the remaining 4.2% was occupied by farmsteads, lanes and waste.

The farm area has increased during the period considered in the above table, but it is expected that this trend will be reversed soon and that by 1960 the farm area will be back to its 1919 size.¹² Quite striking is the reduction in the harvested crop area. This was due to the drought of 1934, the worst ever recorded in the United States. Whereas in 1929 only about 13 million acres, 1.3% of the farm area, were recorded as having crop failures, in 1934, 64 million acres or 6.0% came under that heading.

The withdrawal from cultivation because of its poor quality of about 20 million acres of crop land, which belong to 454,000 farms aggregating about 75 million acres, has been proposed. Besides the crop land these farms include 35 million acres of pasture and 20 million acres of forest, waste and other land. As most of this land belongs to Grade 4 and its poor quality is not offset by economic advantages, its tillage represents an uneconomical form of use which should give way to ranching or forestry. An additional 5 or 6 million acres of crop land might better be replaced by pasture or forest on farms whose size should be increased in order to control erosion or to guarantee a more adequate family living. The areas in which these farms lie are found especially in hilly, forested country, the drier parts of the Great Plains, and regions of light sandy soil or serious soil erosion. About 17 million acres of crop land of average productivity could replace this land whose retirement from cultivation has been recommended.

In addition, about 30 million acres more crop land than at present are required to meet the prospective demand of 1960. This demand for 47 million acres could be met by making the following available: 3 million acres of land irrigable within the range of reasonable cost, 10 million acres through drainage of wet lands, 10 million acres of new clearing on better land now in stumps or trees, and the rest from plowable pasture.

Baker states that "the agricultural conquest of the continent is over. Although there is about as much potentially tillable land still available as that now tilled, this land is mostly too dry or too wet, too steep, stony or sandy, or eroded, to cultivate profitably under present conditions, or those likely to arise in the future."¹³

Farming Regions: The 103rd meridian west of Greenwich marks the division of the United States into two agricultural sections. Crops predominate in the East, pastures in the West. On the basis of the predominance of a certain crop or kind of farming one can distinguish eight farming or agricultural regions in the East, which reflect largely latitude and temperature conditions. These regions are: the Hay and Dairy Region; the Spring-Wheat Region; the Corn Belt; the Hard Winter-Wheat Region; the Corn and Winter-Wheat Belt; the Middle

¹² National Resources Board, *A Report on National Planning*...., *op. cit.*, p. 109.

¹³ Baker, *op. cit.*, p. 49.

Atlantic Trucking Region; the Cotton Belt; and the Humid-Subtropical-Crop Belt. The dominating form of land use in the West is grazing. The four agricultural regions, determined largely by altitude and rainfall, are: the Grazing and Irrigation Crop Region, the North Pacific Forest, Hay and Pasture Region, the Columbia Plateau Wheat Region, and the Pacific Subtropical Crop Region.¹⁴

Distribution of Crop Land: Cereals constitute the major crop of the United States. In 1929 cereals accounted for 56% of the harvested crop area. The year 1934 brought a severe drought so that the drop to 47% in that year is misleading. Among the cereals, corn ranks first, followed by wheat and oats. Cultivated grasses, sorghums and corn cut for forage, silage, etc. accounted for about 23% in 1929. Cotton occupied about 12% that same year, but only 9% in 1934. The great reduction in the cotton acreage between 1929 and 1934 was caused by a combination of low prices, drought and acreage reduction under the program of the Agricultural Adjustment Administration. Tobacco

TABLE 107. U.S.A., CONTINENTAL: ACREAGE DISTRIBUTION
OF FARM CROPS¹⁵ (a)
(In thousand acres)

CROPS	1909		1919		1929		1934	
	Area	Per cent	Area	Per cent	Area	Per cent	Area	Per cent
Cereals	191,470	61.5	219,138	62.9	202,218	55.9	141,234	47.3
Corn harvested for grain	98,383	31.6	87,772	25.2	83,161	23.0	62,247	20.8
Wheat	44,263	14.2	73,099	21.0	62,000	17.1	41,943	14.0
Oats threshed for grain	35,159	11.3	37,991	10.9	33,466	9.3	24,589	8.3
All other cereals	13,665	4.4	20,276	5.8	23,591	6.5	12,455	4.2
Other grains and seeds	5,084	1.6	4,596	1.3	13,318	3.7	...	...
Hay and sorghums for forage	72,402	23.3	77,527	22.2	72,184	19.9	76,534	25.6
Corn cut for silage and root crops for forage			4,092	1.2	4,020	1.1	...	...
Corn cut for fodder	...	...	14,503	...	6,264	1.7	...	...
Vegetables	7,073	2.3	5,479	1.6	6,406	1.8	8,323	2.8
Sugar crops	1,163	0.4	1,491	0.4	1,082	0.3	...	...
Tobacco	1,295	0.4	1,861	0.5	1,888	0.5	1,237	0.4
Cotton	32,044	10.3	33,740	9.7	43,228	11.9	26,754	9.0
Small fruits	272	0.1	249	0.1	387	0.1	...	...
Other crops	391	0.1	376	0.1	10,950	3.1	44,560	14.9
Total	311,195	100.0	348,549	100.0	361,945	100.0	298,642	100.0
			(b)		(c)		(c)	

(a) These figures are based largely on the census. The crop acreages given in U. S. Dept. of Agriculture, *Agricultural Statistics*, differ from the above because of different classifications. For example, the total corn acreage for 1934 is given as 87,795,000 while only 62,247,000 acres of corn were harvested for grain.

(b) Excluding 14,503,000 acres of corn cut for fodder, a large part of which is duplicated in the acreage shown for corn harvested as grain.

(c) Including land in fruit orchards, vineyards and nut trees, not reported before, excluding acreage of annual legumes saved for hay which is practically all duplicated in the acreage shown for the various individual legumes included under "other grains and seeds."

¹⁴ A map showing the distribution of agricultural regions is found in Baker, O. J., *op. cit.*, p. 4, and *Report of the Mississippi Valley Committee of the Public Works Administration*, Washington, 1934, p. 70. A most valuable source of information is the series of articles by Baker, O. J., "Agricultural Regions of North America," *Economic Geography*, Vol. II, 1926, pp. 459-493; Vol. III, 1927, pp. 309-339; pp. 447-465; Vol. IV, 1928, pp. 44-73; 399-433; Vol. V, 1929, pp. 36-69; Vol. VI, 1930, pp. 166-191; pp. 278-320; Vol. VII, 1931, pp. 109-153; pp. 325-364; Vol. VIII, 1932, pp. 325-378; Vol. IX, 1933, pp. 167-197.

¹⁵ *Statistical Abstract of the United States, 1939*, Washington, 1940, pp. 668-669.

acreage also decreased due to the A.A.A.'s policy of balancing production and consumption.

Table 107 presents the distribution of the crop acreage among the various crops. It will be noticed that in 1929 and 1934 the acreage of harvested crops exceeded the acreage of the harvested land by 0.8 to 0.9%, which is explained by double cropping.

Range Land: About 46% of the land area of the United States, or 884,000,000 acres, is range land¹⁶ most of which lies in the arid and semi-arid sections west of the one hundredth meridian. Of this, 550,000,000 acres are non-forest ranges, chiefly in the West, having a native short-grass and bunch-grass vegetation well adapted to arid and semi-arid conditions; and 334,000,000 acres are forest ranges, 43% of which are in the West, 45% in the South and 12% in the central and northeastern part of the country. Approximately 309,000,000 acres are publicly owned, divided among national forests, grazing districts, public domain and other withdrawals and reservations such as Indian reservations; and 575,000,000 are privately owned. The privately owned part passed from public to private ownership through a series of land-disposal laws such as the Enlarged Homestead Act of 1911 and the Stock-Raising Homestead Act of 1916, permitting the entry of 320- and 640-acre homesteads.

The range land contributes substantially to the production of 36% of the country's cattle and calves,¹⁷ 57% of the sheep and lambs, and 73% of the wool. The public domain early came to be considered a great grazing commons on which no control or regulation existed. The free and uncontrolled use of the publicly owned part of the range by sheep and cattlemen led to overcrowding and overgrazing, so that the range lost a large part of its productivity. The privately owned part of the range land suffered also under poor management and misuse. Because of this, approximately 415,000,000 acres or three-fourths of the western range outside the boundaries of national forests and other publicly administered reservations are now subject to depletion of cover, erosion and economic instability. These are largely lands in the arid and semi-arid foothills, plateaus and valleys. Two-thirds are privately owned and the remaining third is either public domain or a mixture of state, county and other public unregulated land. On the whole, range depletion on public domain and grazing districts reaches much higher percentages than on private, Indian, state and county lands or in national forests. Only a very small part of the total range area is in a thoroughly satisfactory condition.

The Taylor Grazing Act of 1934 was designed to remedy the situation as far as the public domain is concerned and establish adequate control of the public range.¹⁸

¹⁶ The figures used in this discussion are taken from the *Report of the National Resources Board*, pp. 203-205, 132-133, 20-21. These differ somewhat from those of *The Western Range*, 74th Congress, 2nd Session, Senate Document No. 199, 1936, a report prepared by the Forest Service, which covers the range area west of an irregular north and south line cutting through the Dakotas, Nebraska, Kansas, Oklahoma and Texas. The range area considered in that report amounts to 728,000,000 acres.

¹⁷ For a discussion of the American cattle industry see Stevens, Angelika, *Die Rindviehwirtschaft der Vereinigten Staaten von Amerika*, Veroff. Inst. Meereskunde, Berlin, B. Historisch-volkswirtschaftliche Reihe, H. 14, 1939.

¹⁸ See Gates, Paul W., "American Land Policy and the Taylor Grazing Act," *Land Policy Circular*, Oct. 1935, pp. 15-37.

"The Grazing Act should and will accomplish a number of important objects. In the first place, it carries practically to completion the policy of conservation of natural resources on the public domain, and is, in a sense, the capstone of a series of laws looking toward a wise and efficient use of our national heritage. Secondly, it establishes the policy of classification on the best of the remaining public lands, which will mean that henceforth public lands will be put to their best and most economical use. Unwise and ill-advised homesteading will henceforth be impossible within the districts. Thirdly, it will provide funds for the development and improvement of areas depleted by overgrazing."¹⁹

The Taylor Grazing Act covers only the public grazing lands. The problem of the private range is very urgent and its solution is only possible if private owners and government agencies cooperate, because very often the owners are not strong enough financially to correct the present state of affairs. The transfer of about 125,000,000 acres of private range and plowed-up range land back to public ownership has been recommended. Even after such a reduction in size, the range land in private ownership will represent a large share of the total. Here it is above all necessary that the owners recognize their responsibility of stewardship over the range land,²⁰ rectify their practices such as excessive stocking and overgrazing, and begin to use their range on the basis of the sustained yield of forage.

*Forest Land.*²¹ The total forest area of the United States is 615,000,000 acres. Approximately 109,000,000 acres are classified as chiefly valuable for uses other than timber and include areas of piñon-juniper forests, chaparral, alpine types, etc., and 11,000,000 additional acres are withdrawn from timber use and belong to parks and other reservations. Thus there remain 495,000,000 acres of forest land available which either bear or are potentially capable of growing timber of commercial quantity and quality. Of this area of commercial forest land, 189,000,000 acres bear stands of saw-timber size, 121,000,000 acres have stands of cordwood size, 102,000,000 have fair to satisfactory tree reproduction, and 83,000,000 acres are classed as devastated or poorly stocked. A large part of the American forest area lies idle except for incidental use for recreation, wildlife and the production of timber which has established itself voluntarily and which grows without attention or care.

The management of the forest land depends almost entirely upon the type of ownership. About seven-tenths of the forested land is privately owned, while only three-tenths is publicly owned. Table 108 classifies the forest land according to ownership.

A large part of the publicly owned forest area is under sound forest management but destructive exploitation and devastation still triumph in private forests. "Fully 95% of the private cutting is probably made without any conscious regard to the future productivity of the forest

¹⁹ *Ibid.*, p. 37.

²⁰ See "Private Ownership—Land and Livestock," *The Western Range*, *op. cit.*, pp. 483-499.

²¹ National Resources Board, *A Report on National Planning* . . . , *op. cit.*, pp. 135-143, 206-216, 21-22. *Forest Land Resources, Requirements, Problems, and Policy*, Part VIII of the *Supplementary Report of the Land Planning Committee to the National Resources Board*, Washington, 1935. See also *A National Plan for American Forestry*, 73rd Congress, 1st Session, Senate Document No. 12, Washington, 1933, 2 vols.

and . . . nearly all of the cutting on publicly owned forest is designed to perpetuate the forest."²²

It is widely recognized that forest devastation on private land must be stopped in order to prevent property injury; to promote the public health by the prevention of stream pollution and the protection and stabilization of municipal water supplies; and to protect roads, railroads and waterways and streams used for irrigation and power purposes, to mention only a few of the major reasons. The principal of sustained yield management must be introduced into private forests.

TABLE 108. U.S.A., CONTINENTAL: TYPE OF OWNERSHIP OF FOREST LAND²³

(In millions of acres and percentages of total area)

TYPE OF OWNERSHIP	1930		1934	
	Area	Per cent	Area	Per cent
Private				
Farm wood lots	150	24.4	150	24.4
Industrial	294	47.8	285	46.3
Total Private	444	72.2	435	70.7
Public				
County and Municipal	2	0.3	5	0.8
State	16	2.6	17	2.8
Federal				
National forests	108	17.6	113	18.4
Public domain	24	3.9	24	3.9
Other	21	3.4	21	3.4
Total Federal	153	24.9	158	25.7
Total Public	171	27.8	180	29.3
Grand Total	615	100.0	615	100.0

There are sufficient indications to show that the traditional American policy of depending upon private ownership and initiative has failed as far as the utilization of forest land is concerned and has led to waste and destruction. Private action in the forest land of the nation has been very seriously detrimental to the owners and to the forest industries, to the productivity of the forest and to the public interest. This will continue as long as expectation of quick business turnover and large profits dominates the mind of the lumberman.

The major forestry problems of the nation are to stop the destructive exploitation of forests not yet depleted and to rebuild those already depleted. To accomplish both purposes calls for action on two fronts: (1) public acquisition, restoration and management of depleted forests; and (2) organization of all forests for sustained yield production.

²² *A National Plan*, . . . *op. cit.*, p. 12.

²³ National Resources Board, *A Report on National Planning*, . . . , p. 209.

Table 109 shows the changes in ownership which have been recommended.

TABLE 109. U.S.A., CONTINENTAL: RECOMMENDED OWNERSHIP AND INTENSITY OF MANAGEMENT OF FOREST LAND²⁴

(In millions of acres)

CLASSIFICATION	TOTAL		MANAGEMENT		
	Area	Per cent	Intensive	Extensive	Protective
Private	257	41.8	114.0	87.0	56.0
Federal	257	41.8	129.0	48.0	80.0
State	77	12.5	49.0	14.0	14.0
County and Municipal	5	0.8	3.0	1.5	0.5
Subtotal	596	96.9	295.0	150.5	150.5
Special Areas (a)	19	3.1	...	...	...
Grand Total	615	100.0	...	...	...

(a) Forest areas on which it is probable no timber cutting will be allowed (national parks, natural areas, etc.).

Soil Erosion and Soil Conservation: The most serious land use problem in the United States is that of soil erosion, a term under which we include the various ways in which the basic resource, the soil, has been wasted by human actions.²⁵ The erosion problem in the United States is a consequence of the period of exploitation in the rapid agricultural conquest of the country. The time is gone when worn-out land could be abandoned for rich virgin soils in the West. Thus the fundamental problems of land use now lie in the conservation of soil and water resources and intelligent soil and farm management.

The seriousness of the soil erosion problem is apparent from the estimates of the soil erosion reconnaissance survey, which covered 1,903,176,620 acres. Of this area 144,768,315 acres, lying principally in the western mountains and intermountain basins region, were not separated into erosion classes because here it is very often impossible to differentiate between normal geological erosion and accelerated or man induced erosion. Little or no erosion was reported for 576,236,37 acres, distributed over all sections of the country. Evidence of man made erosion in one form or another was found on a total area of 1,069,656,563 acres. Of the three types of erosion, (1) sheet erosion (2) gully erosion, and (3) wind erosion, the first has been the most extensive.²⁶

Of the 413,000,000 acres of land under crop in 1930 at least 35,000,000 acres were found to be essentially ruined for further crop use and 125,000,000 acres, most of them still under crops, had lost their productive topsoil, with a resultant decline in productivity ranging up to 90%. Another 100,000,000 acres of good crop land was heading rapidly

²⁴ National Resources Board, *A Report on National Planning* . . . , *op. cit.*, p. 210.

²⁵ *Ibid.*, pp. 161-174. *Soil Erosion: A Critical Problem in American Agriculture*, Part V, Report on Land Plans, Washington, 1935. "Soils and Men," *Yearbook of Agriculture*, 1938, Washington, 1938. Bennett, H. H., *Conservation*, New York, 1939.

²⁶ For a detailed classification of the types of erosion and their extent see *Soil Erosion, A Critical Problem*, *op. cit.*, p. 23.

in the same direction and was therefore in danger of being transformed into marginal or submarginal land.

On the basis of measurements it has been estimated that at least 3,000,000,000 tons of solid material are annually washed out of the pastures and fields of the country. A good deal of this soil contains phosphorus, potassium, nitrogen, calcium and magnesium, the principal elements of plant food.

The federal government is actively combatting the evil of man-induced erosion through the Soil Conservation Service, which is an outgrowth of the Soil Erosion Service, established in the Department of the Interior in 1933. The Soil Erosion Service was transferred to the Department of Agriculture on March 25, 1935, and on April 27, 1935, the President signed an Act of Congress authorizing the Secretary of Agriculture to establish the Soil Conservation Service.

The task of the Soil Conservation Service is (a) to carry on research and field tests in order to develop practical and effective measures of soil conservation, (b) to demonstrate these measures by work on the land in cooperation with landowners and (c) to carry on an educational program in order to show the enormous dangers of erosion and the necessity for sound methods of land use.

The Land Planning Committee of the National Resources Board recommended that: "A national policy of erosion control should contemplate initiation of erosion-control measures on all land now seriously suffering from erosion within about ten years in order to secure reasonable control of erosion within about twenty years, and to establish preventive measures on practically all of the better lands of the country subject to this hazard within a generation."²⁷

Agricultural Adjustment Act: A few words must be said here about the A.A.A. program, which is closely connected with the Soil Conservation Service program.²⁸ The American farmer supplies not only the needs of the country but produces large quantities of wheat, cotton, tobacco, corn and animal products for foreign markets. In the peak year of the 1920's more than 80,000,000 acres of crop land supplied export crops. The shrinkage of export possibilities caused an accumulation of great surpluses and a serious fall in prices in the domestic market. The prospects of the American farmer are also seriously affected by the profound changes in the growth of the domestic population, in food consumption, and in the acreage required to feed horses and mules—a large percentage of which has been displaced by machines, thus freeing a large acreage for crops other than fodder.

These conditions necessitated government action. The government changed its agricultural objectives from the promotion of production to the control of production combined with the policy of conservation. In 1933 the first Agricultural Adjustment Act was passed, and adjustment programs were in effect for cotton, wheat, tobacco, corn and hogs until the Act was declared unconstitutional. These programs fostered some shift from soil-depleting cash crops, such as cotton, wheat and

²⁷ National Resources Board, *A Report on National Planning* . . . *op. cit.*, pp. 173-174.

²⁸ Ezekiel, Mordecai, and Hean, Louis H., *Economic Basis for the Agricultural Adjustment Act*, Washington, 1933. *Report of the Secretary of Agriculture 1933-1938*, Washington, yearly.

corn, to soil-building crops such as grasses and legumes. However, the primary objective of the A.A.A. was production control, with soil conservation as a secondary though increasingly important object. After the invalidation of the first A.A.A., Congress passed the Soil Conservation and Domestic Allotment Act under which soil conservation became the primary object, with some crop adjustments coming in as a by-product. The federal government made grants to farmers cooperating in soil-conserving and soil-building programs. In 1938 the second Agricultural Adjustment Act was passed incorporating experiences gained since 1933 and designed to bring about a profound agricultural adjustment, "the ever-normal granary." The ever-normal granary program combines acreage adjustment, soil conservation and protection for the consumer. It calls for production equal to the normal domestic consumption plus probable export requirements, and it also makes an allowance for a rise in the domestic consumption per capita.²⁹

Land Tenure: The United States Census Classification: The agricultural census of the United States makes a distinction between farm operators and farm laborers. The farm operators are divided into owners, managers and tenants. The tenant group is subdivided into cash tenants, standing renters, share tenants, sharecroppers and other tenants. Farm laborers fall into two classes, unpaid family laborers and all others.

TABLE 110. U.S.A., CONTINENTAL: NUMBER AND AREA OF FARMS AND THEIR DISTRIBUTION ACCORDING TO SIZE³⁰

CLASSIFICATION	NUMBER OF FARMS				TOTAL FARM AREA			
	1930		1935		1930		1935	
	No (In thousands)	%	No (In thousands)	%	In thousand acres	%	In thousand acres	%
Under 3 acres	43	0.7	36	0.5	61 (a)		51 (a)	
3 to 9 acres	315	5.0	535	7.9	1,847	0.2	3,006	0.3
10 " 19 "	560	8.9	683	10.0	7,789	0.8	9,369	0.9
20 " 49 "	1,440	22.9	1,440	21.1	46,252	4.7	46,594	4.4
50 " 99 "	1,375	21.9	1,444	21.2	98,685	10.0	104,016	9.9
100 " 174 "	1,343	21.4	1,404	20.6	180,214	18.3	188,859	17.9
175 " 259 "	521	8.3	540	7.9	110,265	11.2	114,408	10.8
260 " 499 "	451	7.2	473	6.9	156,522	15.9	164,268	15.6
500 " 999 "	160	2.5	167	2.5	108,924	11.0	114,244	10.8
1,000 " 4,999 "	71	1.1	78	1.1	127,525	12.9	141,767	13.4
5,000 " 9,999 "	5	0.1	6	0.1	35,400	3.6	42,254	4.0
10,000 acres or more	4	0.1	5	0.1	113,288	11.5	125,680	11.9
General Total	6,289	100.0	6,812	100.0	986,771	100.0	1,054,515	100.0

(a) Less than 0.1%.

This classification is, however, untenable, as has been recently pointed out by Brandt.³¹ The fallacy lies in the fact that the census fails to

²⁹ Report of the Secretary of Agriculture, 1938, Washington, 1938, pp. 9-11.

³⁰ United States Census of Agriculture, 1935, Washington, 1937, Vol III, p. 50. The same source gives comparative figures for 1880, 1890, 1900, 1910, 1920 and 1925.

³¹ Brandt, Karl, "Fallacious Census Terminology and its Consequences in Agriculture," *Social Research*, Vol. 5, 1938, pp. 19-36.

make the proper distinction between farm operators and farm laborers. It includes sharecroppers under farm operators when in reality they should be listed as farm laborers. This policy of considering the sharecropper as a tenant and farm operator and counting the tract of crop land which he tills as a farm, obscures completely the existence of the plantation. A true tenant manages the farm, determines the type of crop grown and decides upon all other phases of the work, which he may or may not perform himself. A sharecropper, however, does only the labor, while management rests in the hands of the landlord or the latter's representative. The sharecropper is nothing more than an agricultural laborer who is paid with a share of the yield. He is the successor to the former slaves on the plantations.

If Brandt's argument is accepted, all statistics dealing with land tenure and the number and acreage of farms must be revised. According to the agricultural census of the 6,812,350 farms in existence on Jan. 1, 1935, nearly every fifth farm (18.4%) was less than 20 acres in size. About the same percentage was found in the next three major-size groups of 20 to 49 acres (21.1%), 50 to 99 acres (21.2%) and 100 to 174 acres (20.6%). Approximately 4 out of 5 farms (81.3%) had less than 174 acres of land, while 18.7% of the farms contained 175 acres or more. The average size of farms was 154.8 acres in 1935 and 156.9 acres in 1930.

TABLE 111. U.S.A., CONTINENTAL · NUMBER AND AREA OF FARMS AND DISTRIBUTION ACCORDING TO TENURE, 1930 AND 1935³²

CLASSIFICATION	NUMBER OF FARMS				TOTAL FARM AREA			
	1930		1935		1930		1935	
	No. (In thousands)	Per cent of Total	No. (In thousands)	Per cent of Total	Thousand acres	Per cent of Total	Thousand acres	Per cent of Total
Owners ·								
Full owners	2,912	46.3	3,210	47.1	372,450	37.7	390,978	37.1
Part owners	657	10.4	689	10.1	245,926	24.9	266,071	25.2
Total owners	3,568	56.7	3,899	57.2	618,376	62.6	657,049	62.3
Managers	56	0.9	48	0.7	61,986	6.3	60,664	5.8
Tenants	2,664	42.4	2,865	42.1	306,409	31.1	336,802	31.9
Grand Total	6,289	100.0	6,812	100.0	986,771	100.0	1,054,515	100.0

Types of Tenure: The census distinguishes between full owners, part owners, managers and tenants. In 1935, 57.2% of all farms were operated by owners and part owners, 0.7% by managers, and 42.1% by tenants. According to the census, the proportion of farms operated by tenants increased from 26.0% in 1880, to 35.3% in 1900, 37.0% in 1910, 38.1% in 1920, and 42.4% in 1930, while it decreased slightly to 42.1% in 1935.³³ Thus for 50 years the farmers in most sections of the United States have been slowly losing the ownership of the land they till.³⁴

³² *United States Census of Agriculture, 1935, Vol. III, p. 105.*

³³ Turner, H. A., *A Graphic Summary of Farm Tenure*, U.S. Dept. of Agriculture, Misc. Publ. No. 261, Washington, 1936.

³⁴ See Baker, O. E., *Agriculture in Modern Life, Part I, Our Rural People*, New York, 1939, pp. 44-70.

In his attempt to determine how many farms there were in the United States, Brandt subtracted 90% of the sharecroppers from the total number of farm operators. T. Lynn Smith is of the opinion that "Brandt was probably unduly conservative in his procedure since, without doubt, the large groups of laborers called 'share tenants,' who are merely croppers in possession of mules, would much more than offset the discrepancy he allowed for."³⁵

Table 112 gives Brandt's corrections of the U.S. Census of 1935.

TABLE 112. U.S.A., CONTINENTAL: COMPARISON OF 1935 CENSUS DATA AND BRANDT'S REVISIONS³⁶

ITEM	TOTAL UNITED STATES		11 SOUTHERN STATES	
	U.S. Census 1935	Brandt's Revision	U.S. Census 1935	Brandt's Revision
All farms	6,812,350	6,167,720	2,770,671	2,165,561
Owner-operated farms	3,947,195	4,018,821	1,208,092	1,275,327
Tenant-operated farms	2,865,155	2,148,899	1,562,579	890,234
Per cent tenant operated	42.1	34.8	56.4	41.1
Average size of all farms	154.8 acres	171.0 acres	110.2 acres	141.0 acres
Average size of owner-operated farm	181.8 "	186.0 "	157.9 "	166.7 "
Average size of tenant-operated farm	117.6 "	142.8 "	73.4 "	104.4 "

Farm Tenancy: Although the homestead policy put millions of acres of free land into the hands of the farmers, it was discovered as early as 1880, when the first tenure census was taken, that about 26% of American farmers were tenants. Since then each succeeding census has shown a persistent growth both in the amount and proportion of farm tenancy.³⁷

The ratio of farm tenancy is influenced by a series of factors, such as crops grown, size, value and type of farm, also color or race and age of farmer, all of which are brought out by Turner in his graphs and maps. Farm tenancy differs in the various sections, states and communities of the country. Thus the relationship between landlord and tenant in the South is of a nature entirely different from that in the Corn and Wheat Belts, which is explained by differences in types of farming and people. The negro tenants and sharecroppers of the South are the successors of the slaves from whom they are only two generations removed. The South has the highest rate of tenancy, even in Brandt's revision. The rate of tenancy is seriously high in the cash-grain areas of the Corn Belt and the wheat-growing sections of the Western Plains states. Here the growth of tenancy is due to foreclosures

³⁵ Smith, T. Lynn, *The Sociology of Rural Life*, New York, 1940, p. 271

³⁶ Brandt, *op. cit.*, p. 29

³⁷ *Farm Tenancy, Message of the President of the United States Transmitting the Report of the Special Committee on Farm Tenancy, 75th Congress, 1st Session, House Doc. No. 149, Washington, 1937.* "Certain Aspects of Land Problems and Government Land Policies," Part VII of the *Supplementary Report of the Land Planning Committee to the National Resources Board*, Washington, 1935. Brandt, Karl, "Farm Tenancy in the United States," *Social Research*, Vol. 4, 1937, pp. 133-156

of family-operated farms and to the retirement of the pioneer farmers whose children have moved to the cities and prefer to rent out the family farm rather than to sell it. In these regions rich soils, high land values and the commercial character of the agriculture favor tenancy.³⁸

Antisocial Features of American Farm Tenancy: "The American type of farm tenancy has been characterized by some students of the situation as being the worst tenant system to be found among civilized nations. At the same time, other economists and observers have pointed out that there are some desirable features in constantly maintaining a certain proportion of our farmers as tenants."³⁹ One must, however, point out some "flagrant antisocial consequences" of the tenancy system.

The most important source of the undesirable aspects of the problem is short-term tenancy. "The high degree of instability is a sad commentary on the American tenant system, and in great contrast to the tenants in many foreign countries where the same family often remains on one farm for several generations."⁴⁰ Many of the American tenant farmers are agrarian gypsies who have no incentive to protect or to improve the productivity of the land they till or to maintain the houses they live in. There is no incentive for the tenant to prevent erosion and the depletion of soil fertility if he knows that in a year or two he will have to move again. The one-crop system of farming is closely associated with tenancy because there is little space for crop rotation. Constant moving has an adverse effect on such rural social institutions as school and church. Especially depressed is the economic status of the southern sharecropper who is poorly housed, poorly fed and poorly provided with community services.

The federal government, through the Bankhead-Jones Farm Tenant Act of 1937, is trying to help a limited number of competent tenants, sharecroppers and farm laborers to purchase their own farms. The rural rehabilitation program of loans and guidance, provided for in the second title of the Farm Tenant Act, was first entrusted to the Resettlement Administration and is now the responsibility of the Farm Security Administration. Title III provides for the retirement of submarginal land from farming. Although the Act will not turn all tenants into owners, it "will make a start in lifting worthy tenants up the tenure ladder and at the same time will promote better farming and better care of the soil."⁴¹

Agricultural Laborers: "Most neglected of all significant aspects of changing tenure relationships in American agriculture have been the growing numbers of farm laborers."⁴² California is the state in which the ratio of agricultural workers is highest. Out of 1,000 males 20 years of age and over gainfully employed in agriculture, 277 were farm laborers in 1880 and 577 in 1930. The seasonal fluctuations in labor requirements for the harvesting of fruits, vegetables and cotton forces

³⁸ For further references on tenure and tenancy see: U.S. Dept. of Agriculture, Misc. Pub. No. 172, *Bibliography on Land Settlement*, compiled by Louise O. Bercaw (and others), Washington, 1934; U.S. Dept. of Agriculture, Misc. Pub. No. 284, *Bibliography on Land Utilization, 1918-1936*, compiled by Louise O. Bercaw (and others), Washington, 1938.

³⁹ *Certain Aspects of Land Problems* . . . , *op. cit.*, p. 37

⁴⁰ *Ibid.*, p. 39.

⁴¹ Chew, Arthur P., *The Response of Government to Agriculture*, Washington, 1937, p. 91

⁴² Smith, T. Lynn, *op. cit.*, p. 287.

a very large part of the California agricultural workers to move constantly from district to district.⁴³ Not only in California, but also in the Southwest, in the Pacific Northwest and in the East we find migratory agricultural workers. The migration of the wheat harvesters between Texas and Canada is a matter of the past, an illustration of the way in which technical development may influence the life of agricultural workers.

Outlying Territories and Possessions: For statistics on Alaska, Hawaii, Guam and American Samoa the reader is referred to "Outlying Territories and Possessions of the United States," *The First World Agricultural Census*, Bull. No. 12, International Institute of Agriculture, Rome, 1936, based upon the Census of 1930.

⁴³ See especially Taylor, Paul S., *Migration of Workers*, Preliminary Report of the Secretary of Labor, 75th Congress, 1st Sess., Senate, Washington, 1938. Mineogr., Part I, Ch. X. See also, McWilliams, Catey, *Factors in the Field, The Story of Migratory Farm Labor in California*, Boston, 1939.

MEASURES

Length

1 kilometer = 1,000 meters = 3,280.8 feet

1 cho = 109 meters

Area

1 sq. mile = 640 acres

1 hectare = 10,000 sq. meters = 2.471 acres

1 sq. kilometer = 1,000,000 sq. meters = 247.1 acres

1 cho = 2.45 acres

1 bouw = 0.7096 hectare = 1.77 acres

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